APRIL 22, 1933

Railway Age

Founded In 1856

The New Union Terminal at Cincinnati

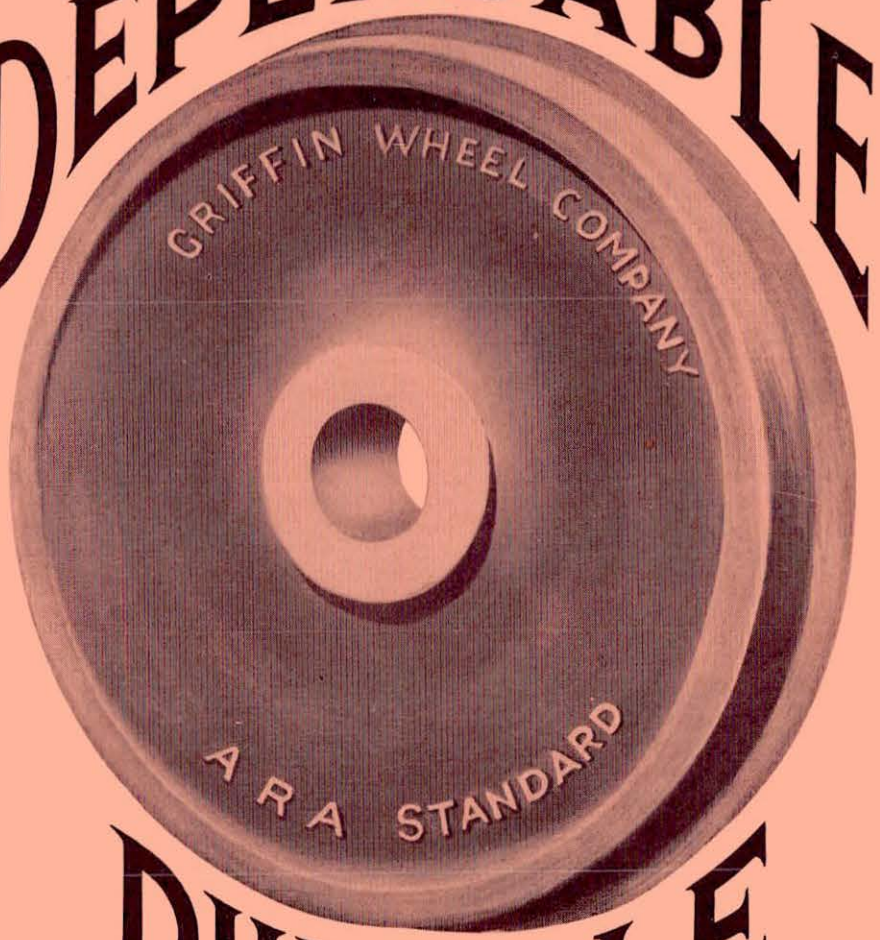
THE new $41,000,000 Union Terminal at Cincinnati marks an outstanding milestone in engineering achievement, in architectural design and in luxury of accommodations for the traveller. Jointly owned and used by all seven of the railroads which serve the city of Cincinnati, it exemplifies an exceptional capacity for united action without which this great project could not have been successfully achieved.

To the railway men, engineers, architects, and producers of material and equipment, through whose combined labor and skill the manifold problems were solved, and the opportunities for exceptional results were successfully utilized, the Cincinnati Union Terminal stands as a permanent tribute. Details of the new terminal will be found in both the editorial and advertising pages of this issue.

GENEVA COLLEGE LIBRARY,
No.
BEAVER FALLS, PA.

GRIFFIN CHILLED TREAD WHEELS

DEPENDABLE



DURABLE

THE FOOD SUPPLY OF THE NATION IS CARRIED
ON CHILLED TREAD WHEELS

GRIFFIN WHEEL COMPANY

410 NORTH MICHIGAN AVENUE CHICAGO, ILLINOIS

Plants

Chicago	Boston	Cincinnati	Kansas City	Denver	Los Angeles
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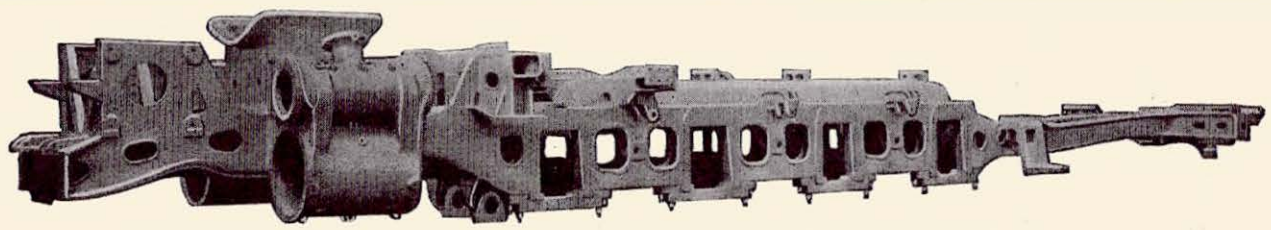
Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879.

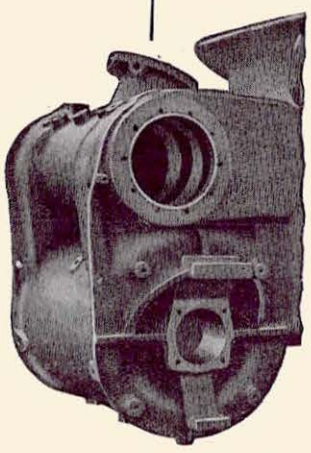
OFTEN REPEATED BY MECHANICAL DEPARTMENT MEN—

"Commonwealth Beds Greatly Reduce Cost of Locomotive Repairs"



CAST STEEL LOCOMOTIVE BED WITH INTEGRAL CYLINDERS, REAR CYLINDER HEADS, AND AIR RESERVOIR

VIEW SHOWING INTEGRAL REAR CYLINDER HEAD AND GUIDE BAR SUPPORTS



"Here's Why"—

A one-piece steel casting properly designed

•

Eliminates many separate parts and hundreds of bolts

•

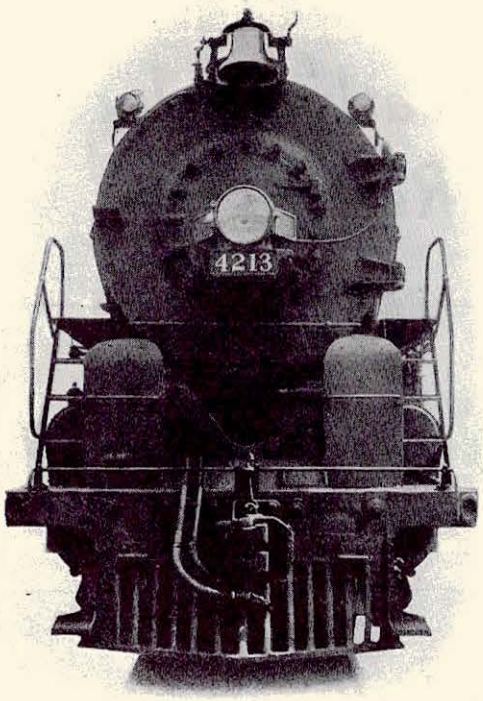
Insures maximum strength throughout

•

Preserves true alignment of frame structure, cylinders and moving parts at all times

GENERAL STEEL CASTINGS CORPORATION

EDDYSTONE, PA. COMMONWEALTH PRODUCTS GRANITE CITY, ILL.



SAVINGS CAN BE MADE *NOW!*

Today, traffic is being moved by the best 60 per cent of the locomotives owned by the American railroads.

But, only 17 per cent of the entire locomotive ownership is composed of modern locomotives built during the past 12 years.

Assuming that the 60 per cent of the inventory now in operation includes all of the newest and most modern locomotives, there is still a high percentage of obsolescence.

Only about one quarter of the locomotives in daily use are less than 12 years old.

About half are between 12 and 22 years old and, therefore, more or less obsolete.

The remaining quarter are more than 22 years old. These older locomotives cannot be operated economically under present day conditions.

Even with present traffic, the replacement of this obsolete power with modern locomotives would show immediate savings in operating and maintenance expenses and improved earnings for the railroads.

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS
PHILADELPHIA

Published every Saturday by the Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa., with executive offices at 30 Church Street, New York

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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 94 April 22, 1933 No. 16

In This Issue

Cincinnati's New Union Terminal Now in Service.....Page 575

An article in which Walter S. Lacher, engineering editor, *Railway Age*, describes this $41,000,000 facility, which serves all seven railroads entering the city and which embodies many departures from conventional design.

Effect of Present Car Condition on Expeditious Freight Handling.. 591

C. J. Nelson, superintendent of interchange, The Chicago Car Interchange Bureau, discusses studies which revealed that 75 per cent of the loaded cars delayed for repairs in Chicago in 1932 were defective when loaded.

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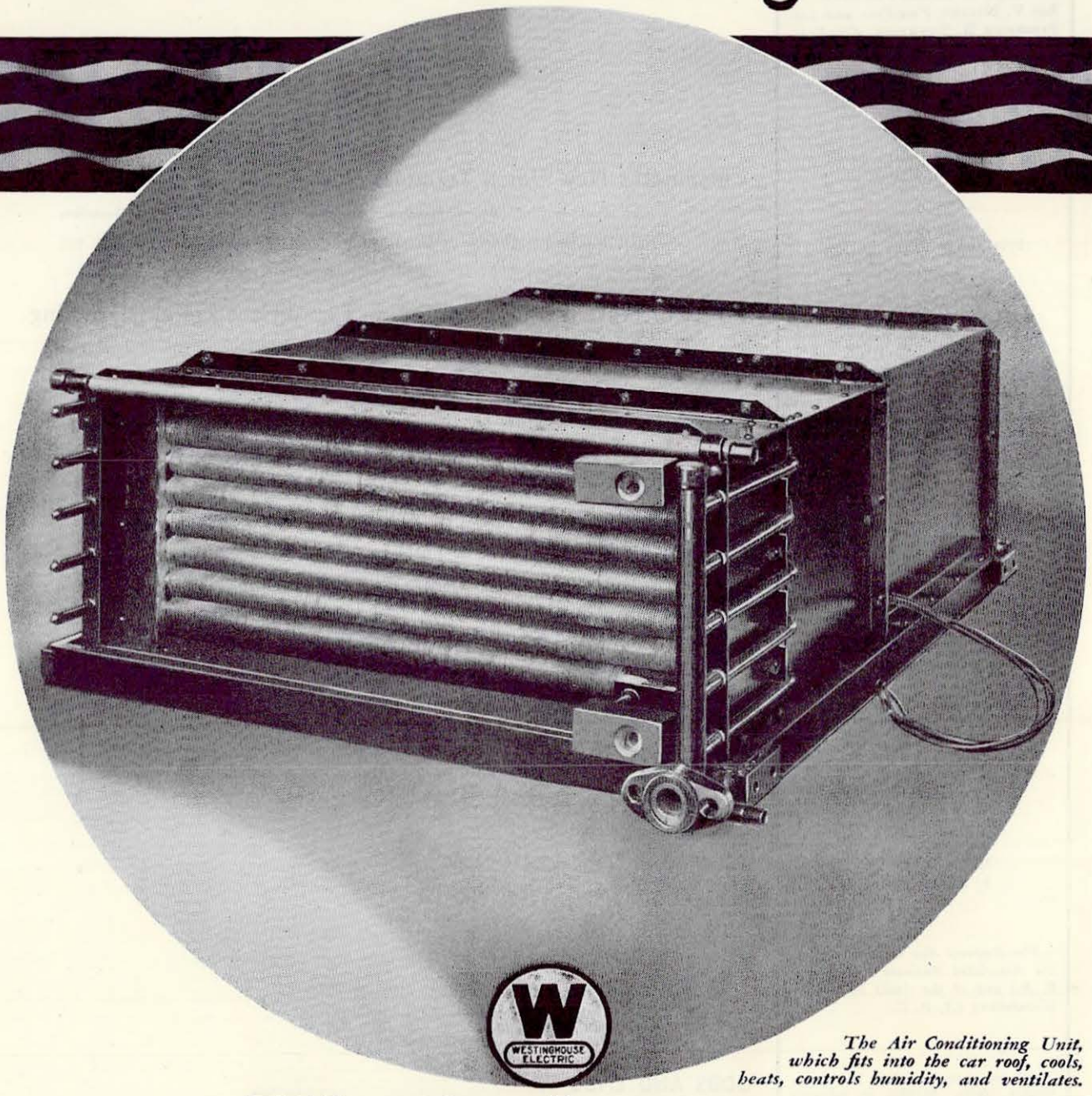
NO MAJOR CAR
to install Westinghouse



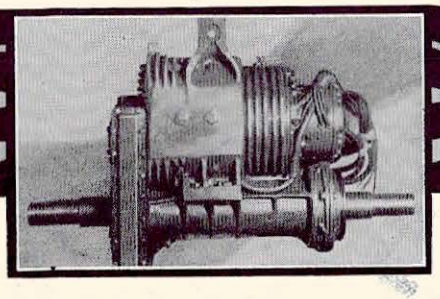
The Air Conditioning Unit, which fits into the car roof, cools, heats, controls humidity, and ventilates.

Westinghouse

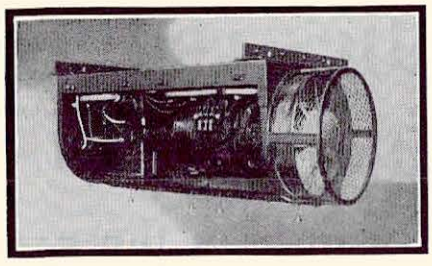
Quality workmanship guarantees every Westinghouse product

COMPLETE AIR CONDITIONING

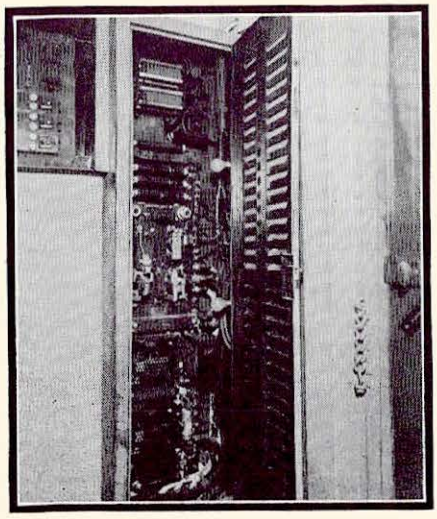
ALTERATION NECESSARY
Air Conditioning . . .



The 15-kw. Axle Generator with its gear drive which has given 12 million miles of highly successful operation.



The Refrigerating Unit has an a-c.—d-c. motor, making possible pre-cooling of cars prior to departure by simply plugging in on an a-c. power source.



Controls are designed to fit standard car lighting control cabinets.

WESTINGHOUSE air conditioning units can now be applied to old or new cars without major car or roof alterations. Hatches are no longer essential.

To reduce installation costs still further, Westinghouse air conditioning units are completely assembled in an adequately insulated frame at the factory and shipped ready for application to the car.

Westinghouse provides a *complete* system of air conditioning designed, built and guaranteed by a *single* manufacturer. All parts are therefore perfectly coordinated to assure *reliable* and *economical* final results.

With the Westinghouse system *continuous* air conditioning is possible whether the car is stopped, disconnected from the train, or running at slow or high speeds.

The Westinghouse air conditioning system offers *all* these advantages *together with maximum economy, reliability, and long operating life.*

A Westinghouse railway air conditioning engineer will be glad to bring you complete details substantiating these facts, and to suggest to you ways and means of making an adequate installation at minimum cost.

SEND FOR INFORMATION

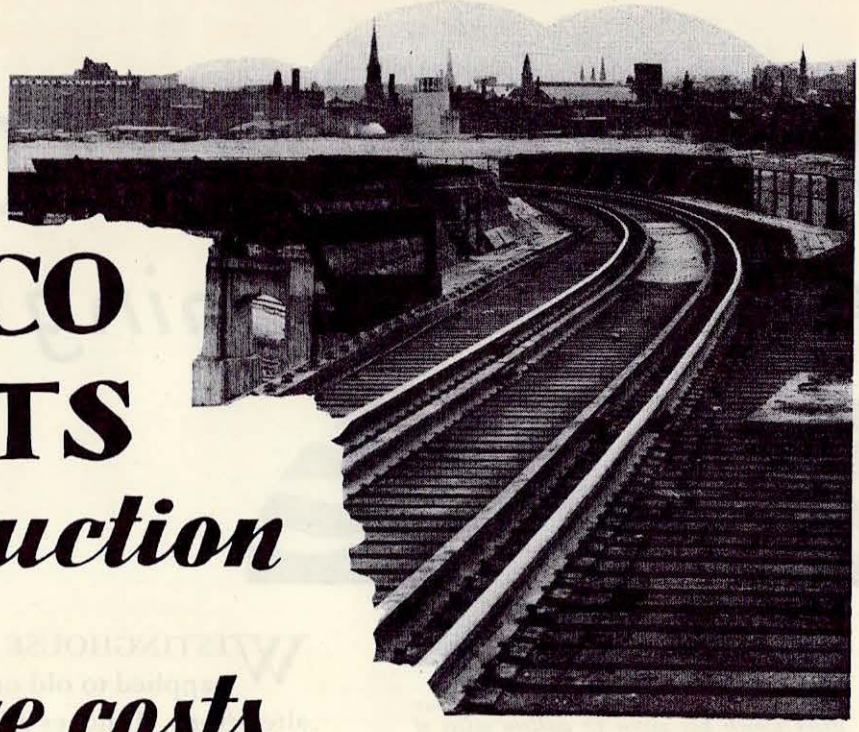
Westinghouse Electric & Manufacturing Company.
Room 2-N—East Pittsburgh, Pa.

Gentlemen: Your Circular 1967, "Railway Air Conditioning Equipment," please.

Name.....
Company.....
Address..... T-79551
City..... *State*..... RA 4-22-33

EQUIPMENT — FROM RAIL TO ROOF

How AMCRECO PRODUCTS *cut construction and maintenance costs*



Courtesy The Cincinnati Union Terminal Company

1. Long-lived creosoted ties reduce annual requirements*

Quality is inherent in AmCreCo Products (ties, piles, poles and timber)

Because:

1. Only carefully selected timber is used.
2. Woods practice and plant handling protect against incipient decay.
3. Treatment is accurately timed to proper seasoning.
4. Only creosote from pure coke oven or coal gas tar is used.
5. The wood is adequately treated.
6. Framing before treatment is standard practice.
7. The facilities and personnel of the leading producer in the industry are back of every AmCreCo product.

The maintenance records of those railroads who have taken the lead in the adoption of creosoted ties show important reductions in tie renewals —50%, 70%, and even more. Such reductions mean big savings in the cost of ties every year.

Lowry process treated ties consistently rank at the top in the records of savings of this kind. We will gladly show you how such ties can cut your costs.

AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AMCRECO LOWRY PROCESS CREOSOTED WOOD

GEORGIA CREOSOTING COMPANY INCORPORATED

LOUISVILLE — KENTUCKY

**The first of a series of discussions, pointing out reasons for the economy produced by AmCreCo products.*

JANNEY COUPLER YOKES

SIX ADVANTAGES

DEPENDABLE

LESS MAINTENANCE EXPENSE

REPLACES RIVETED YOKES

EASILY APPLIED

GREATER STRENGTH

JANNEY VERTICAL KEY YOKE

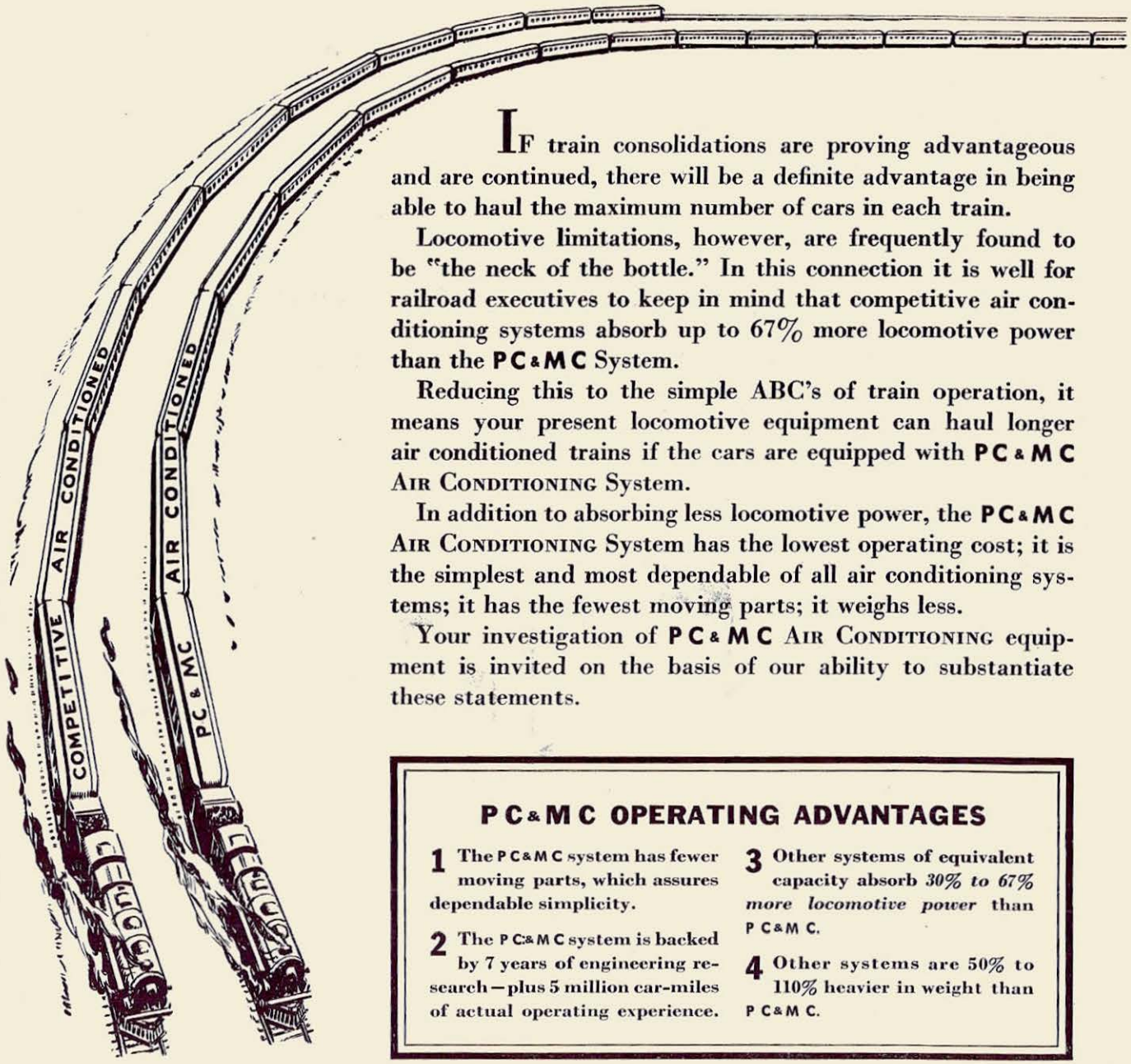
ELIMINATES RIVET EXPENSE

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

LONGER TRAINS POSSIBLE!

The PC&MC *Air Conditioning System absorbs less locomotive power!*



IF train consolidations are proving advantageous and are continued, there will be a definite advantage in being able to haul the maximum number of cars in each train.

Locomotive limitations, however, are frequently found to be "the neck of the bottle." In this connection it is well for railroad executives to keep in mind that competitive air conditioning systems absorb up to 67% more locomotive power than the **PC&MC** System.

Reducing this to the simple ABC's of train operation, it means your present locomotive equipment can haul longer air conditioned trains if the cars are equipped with **PC&MC** AIR CONDITIONING System.

In addition to absorbing less locomotive power, the **PC&MC** AIR CONDITIONING System has the lowest operating cost; it is the simplest and most dependable of all air conditioning systems; it has the fewest moving parts; it weighs less.

Your investigation of **PC&MC** AIR CONDITIONING equipment is invited on the basis of our ability to substantiate these statements.

PC&MC OPERATING ADVANTAGES

1 The PC&MC system has fewer moving parts, which assures dependable simplicity.

2 The PC&MC system is backed by 7 years of engineering research—plus 5 million car-miles of actual operating experience.

3 Other systems of equivalent capacity absorb *30% to 67% more locomotive power* than PC&MC.

4 Other systems are 50% to 110% heavier in weight than PC&MC.

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THE CINCINNATI UNION TERMINAL

MEASURED in terms of safety, comfort, speed and reliability of service, year in and year out, in bad weather as well as good, railway travel stands in a class by itself. This enviable position is the result of long years of experience, heavy investment in well-planned facilities and equipment, and a will to improve in the face of tremendous obstacles.

The new CINCINNATI UNION PASSENGER TERMINAL is an outstanding example of railway enterprise to this end. Faced with seemingly insurmountable difficulties, the managements of seven independent carriers agreed upon a bold plan and assumed the obligation of the heavy expenditures to which this plan committed them.

It represents an investment of $41,000,000 for a new site and a complete plant, including a passenger station, mail and express facilities, a coach yard and an engine terminal, as well as convenient means of access by the several lines of the participating railways, in addition to the latest in interlocking equipment. It entailed also the abandonment of five old stations, together with the drastic rearrangement of other terminal facilities.

But the project means even more than this. It represents a distinct step forward in passenger terminal design, in which convenience, beauty and low maintenance cost have been combined in a structure that stands as a monument to private enterprise, which should make for renewed confidence on the part of the public and restore courage in the hearts of railway men.

In recognition of the outstanding character of this project, *Railway Age* presents herewith a comprehensive description of this terminal as a whole and of its various component parts individually, together with an account of the work of those who prepared the design, supplied the materials and carried out the construction.

JAMES STEWART & CO., INC.

CONTRACTORS

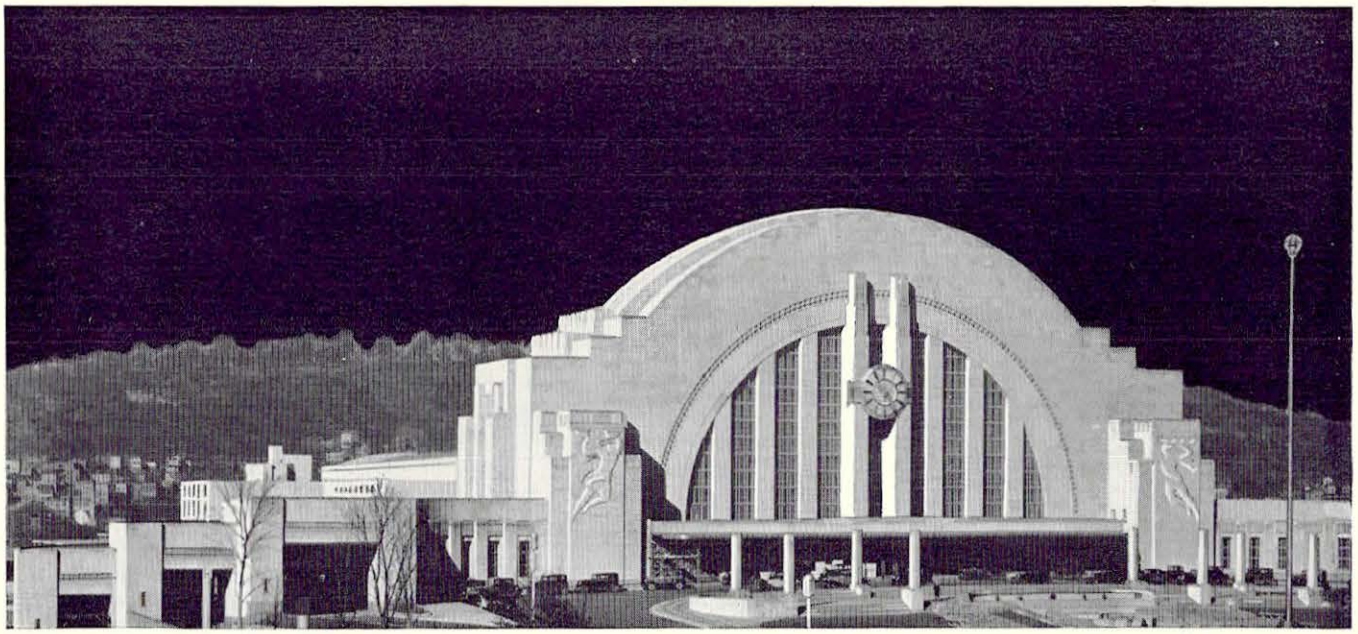
NEW YORK

BUILDERS OF

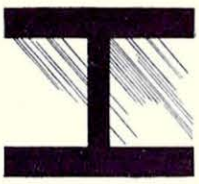
CINCINNATI UNION STATION

AND

MAIL HANDLING BUILDING



Cincinnati's



Cincinnati can indeed be proud of its new portal . . . one befitting the industrial and commercial importance of "the Queen City." We too take genuine pride in this magnificent terminal because of the large share Carnegie products have had in its construction. Many thousands of tons of wide-flanged CB Sections . . . the most recent

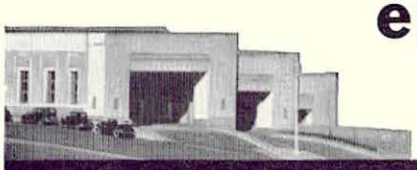
contribution to the efficiency of structural steel . . . form the structural framework of the gigantic Terminal Building. In the maze of tracks leading into the station, 94 miles in all, Carnegie rails, rail joints, tie plates, spikes and bolts are also used in large amounts. The faith in Carnegie products, evidenced by their extensive use, will here again be fully justified by many years of efficient and satisfactory service.

217

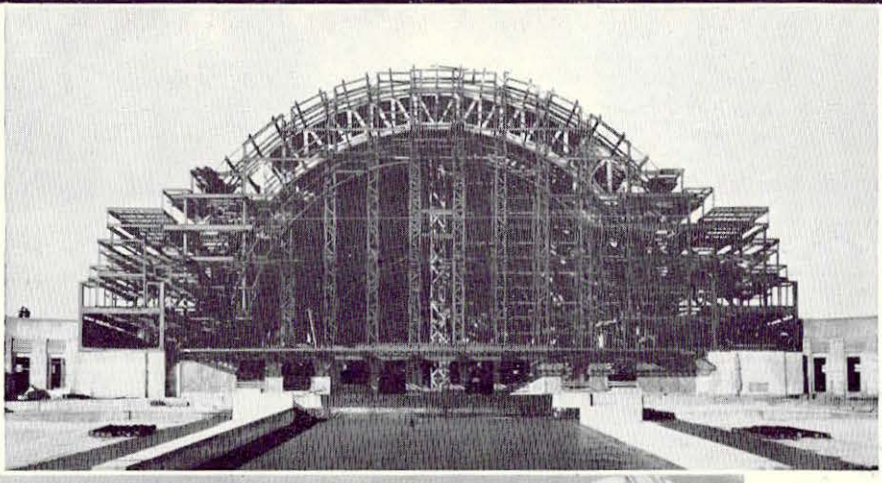
CARNEGIE STEEL

Subsidiary of United

Again **Carnegie Products play the important part in an outstanding engineering achievement**



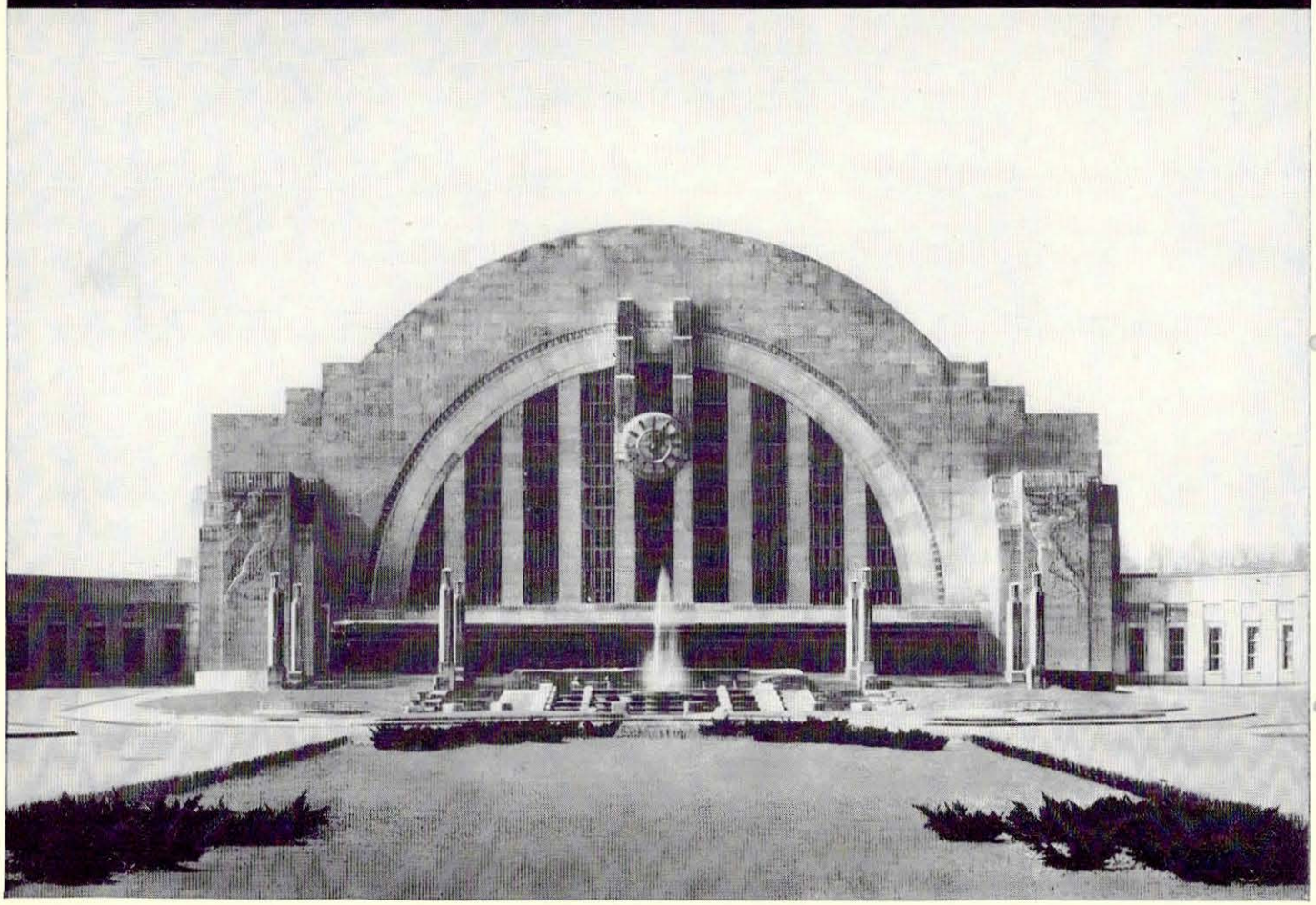
NEW FRONT DOOR

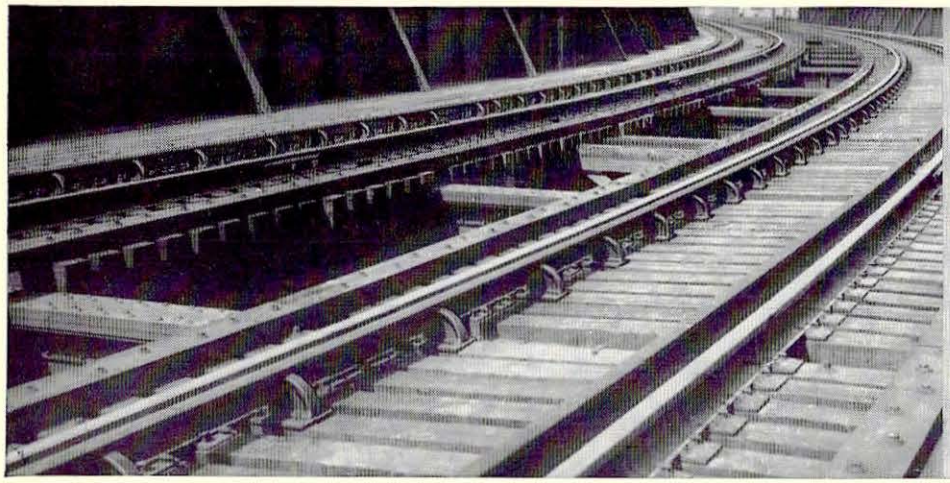


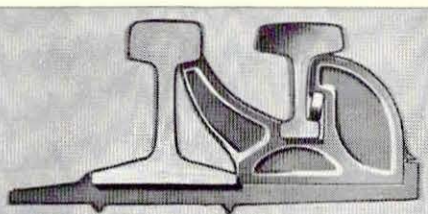
COMPANY PITTSBURGH, PA.

States Steel Corporation

CINCINNATI UNION TERMINAL . . . . . ANOTHER

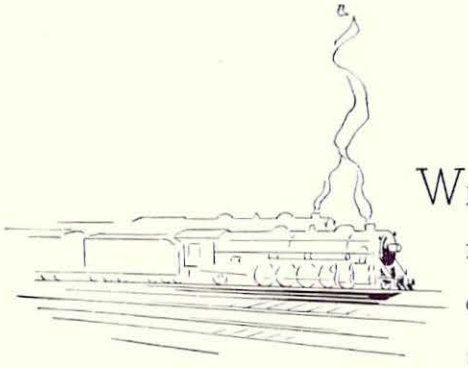






THE MANEY GUARD RAIL ASSEMBLY

RAILROAD ACHIEVEMENT



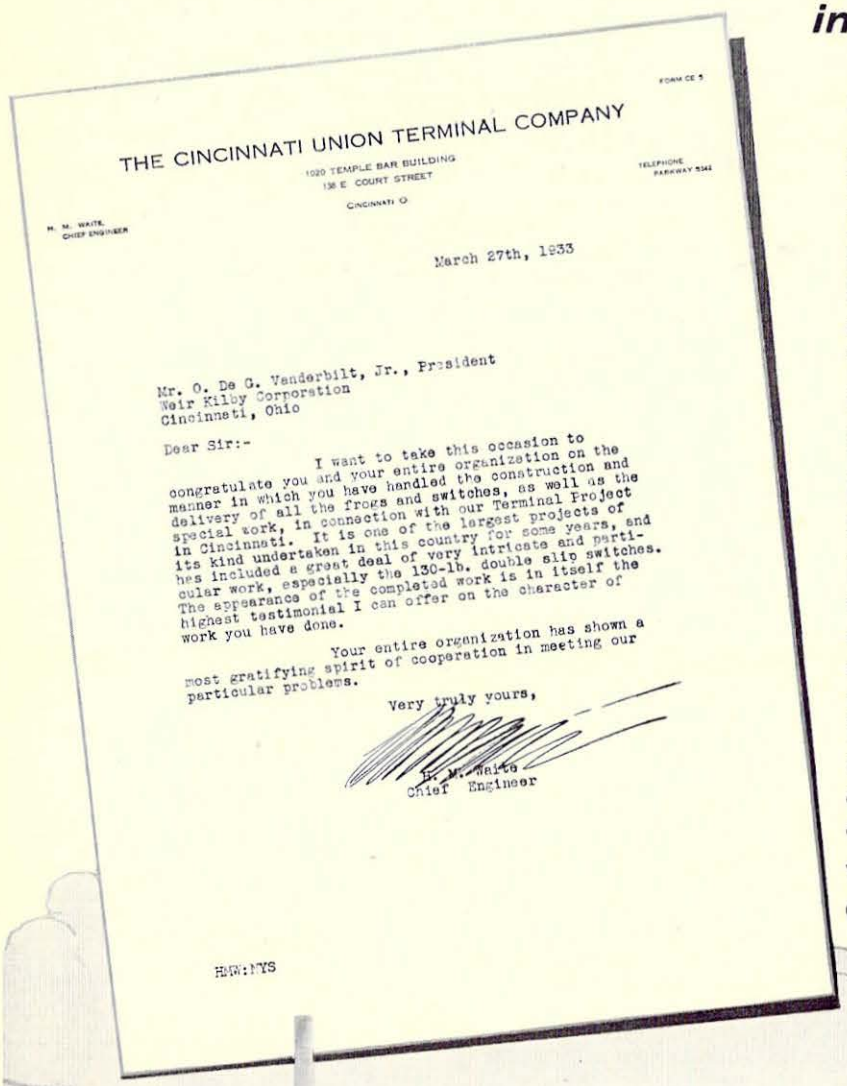
WITH the opening of the Cincinnati Union Terminal, seven great railroads unite to give this city the most modern of terminal facilities. » » In this project Republic has been proud to have had a share by supplying materials such as over 400 tons of pipe and many car loads of galvanized steel sheets and track bolts. » » In addition it has contributed to the safety of operation by furnishing seven miles of Maney Guard Rail. » » This simple, two-piece fastening assembly unites the track and guard rails into a one-piece unit. A compensating tie plate, extending under both the guard and main rails, interlocks the two rails firmly together. Heavy train pressures cannot alter their positions. The Maney Guard Rail Assembly defies the most severe stresses of today's heavy traffic and assures an absolutely correct flangeway at all times.

REPUBLIC STEEL
CORPORATION
YOUNGSTOWN OHIO

WEIR KILBY

PROVIDED THE SPECIAL TRACKWORK

The Largest Program in Many Years . . . .



THE CINCINNATI UNION TERMINAL COMPANY

1020 TEMPLE BAR BUILDING
138 E. COURT STREET
CINCINNATI O.

TELEPHONE PARKWAY 5342

H. M. WAITE, CHIEF ENGINEER

March 27th, 1933

Mr. O. De G. Vanderbilt, Jr., President
Weir Kilby Corporation
Cincinnati, Ohio

Dear Sir:-

I want to take this occasion to congratulate you and your entire organization on the manner in which you have handled the construction and delivery of all the frogs and switches, as well as the special work, in connection with our Terminal Project in Cincinnati. It is one of the largest projects of its kind undertaken in this country for some years, and has included a great deal of very intricate and particular work, especially the 130-lb. double slip switches. The appearance of the completed work is in itself the highest testimonial I can offer on the character of work you have done.

Your entire organization has shown a most gratifying spirit of cooperation in meeting our particular problems.

Very truly yours,

H. M. Waite
Chief Engineer

HMW:MYS

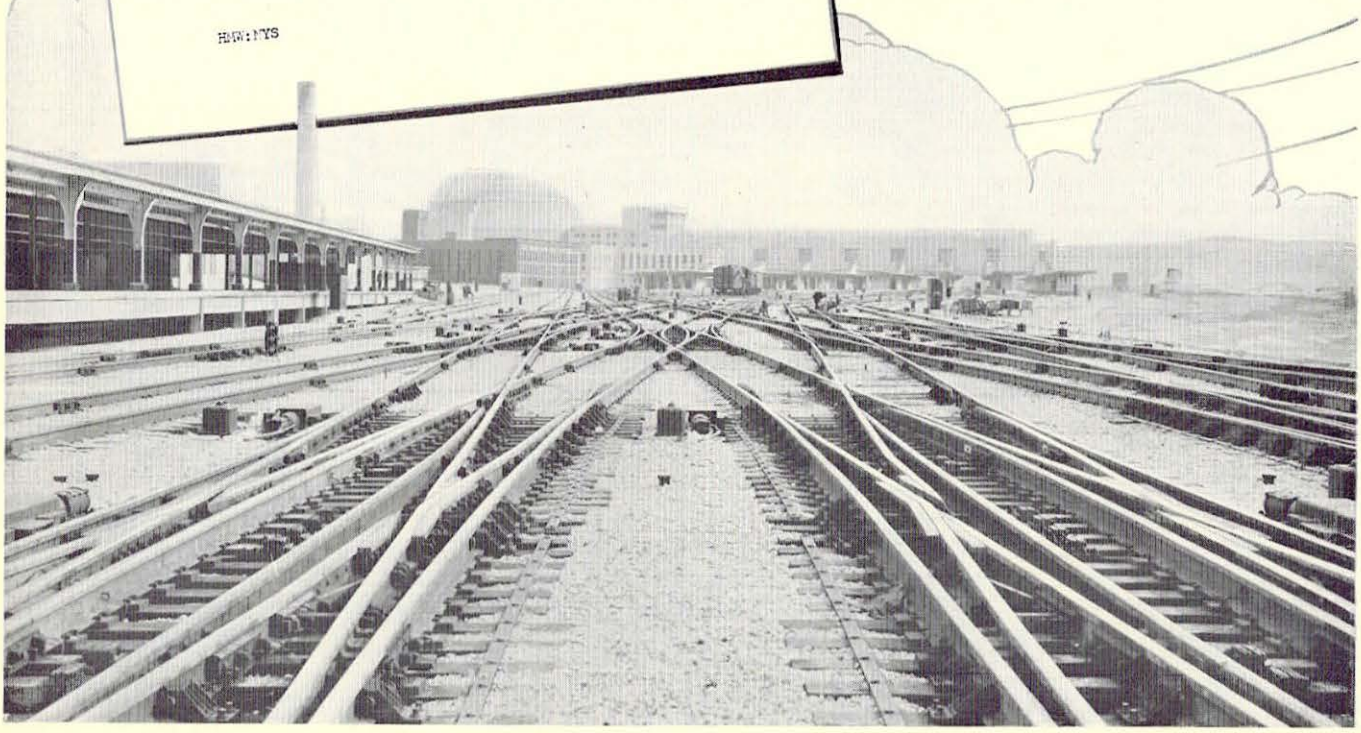
CONFRONTED with the biggest track work project of the decade, the Cincinnati Union Terminal Company turned to Weir Kilby.

In this project it was essential that the frogs, switches, crossings and accessories be built of the best approved materials and to the most approved design.

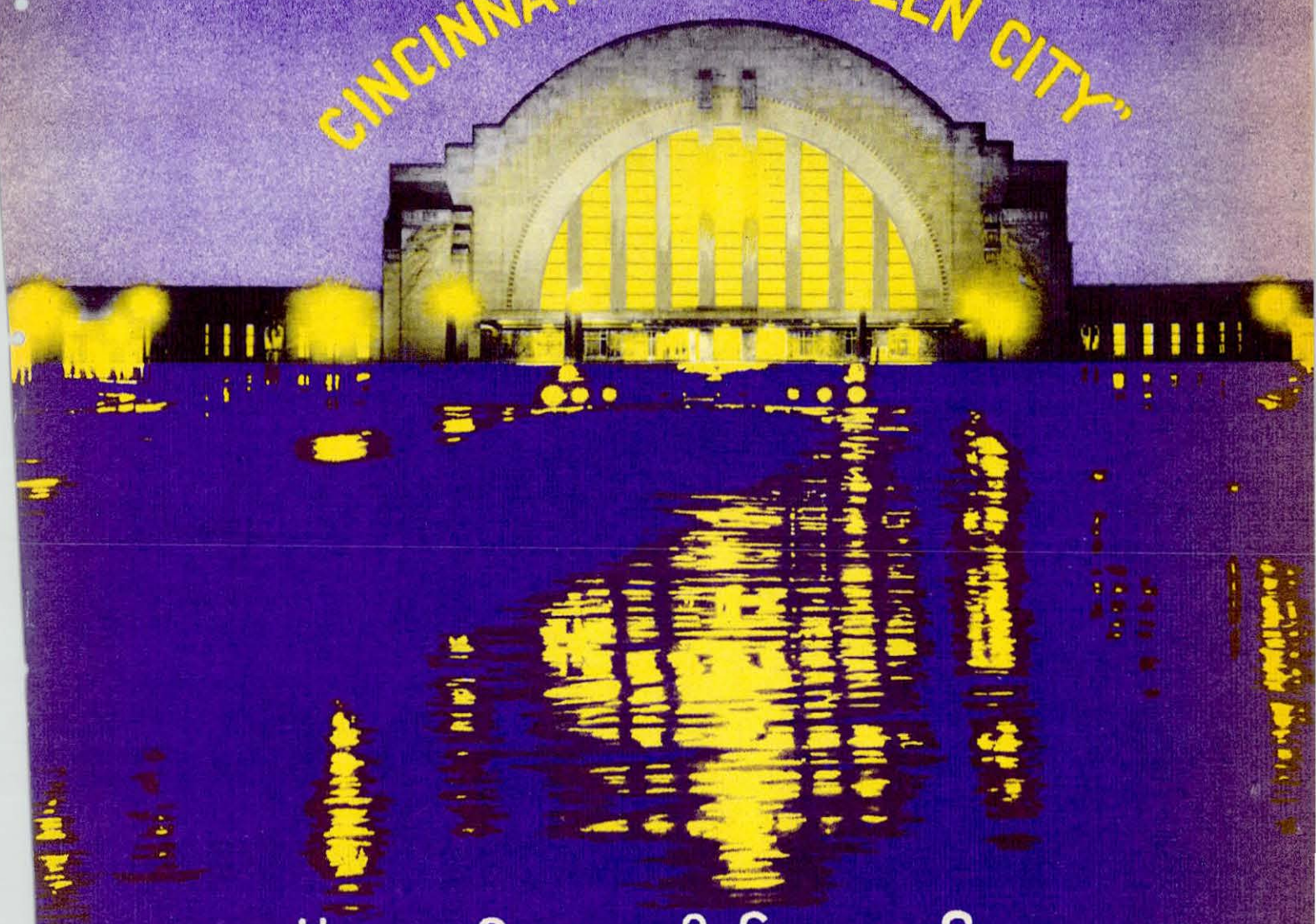
That Weir Kilby met these requirements is evidenced by the fact that they were given the order for equipping the entire layout which included 462 Turnouts, 43 Double Slip Switches, 5 Diamond Crossings and 134 Switch Stands.

The Cincinnati Terminal development demonstrates that the Weir Kilby Corporation by virtue of long experience, capable engineering personnel and adequate manufacturing facilities, is qualified to fabricate special track work orders, large or small, where promptness of delivery and quality of materials and workmanship are important.

WEIR KILBY CORPORATION
CINCINNATI OHIO



MODERN SIGNALING
FOR A
MODERN TERMINAL



UNION SWITCH & SIGNAL CO.
SWISSVALE, PA.

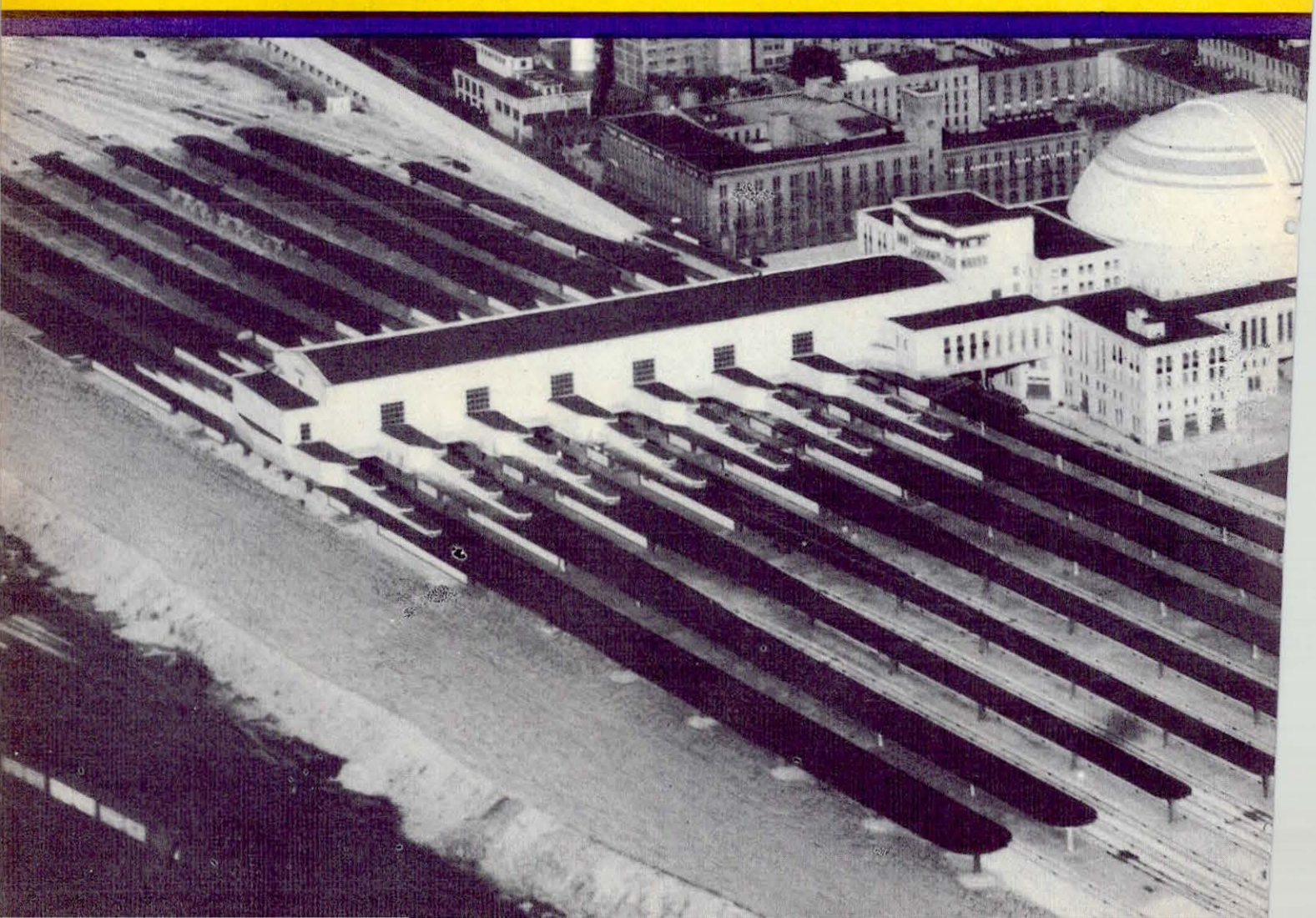
SPEEDS TRAFFIC WITH "Union" EL

CINCINNATI now joins the long list of cities throughout the country where "Union" Electro-Pneumatic Interlocking is used for its new terminal and insures that safety, flexibility, speed of operation, economy and reliability of operation so necessary to meet modern demands.

"Union" Electro-Pneumatic Interlocking is also in service at such important terminals as Boston; New York; Hoboken; Jersey City; Philadelphia; Pittsburgh; Indianapolis; Chicago; St. Louis; Kansas City; San Francisco; Washington; Nashville; Richmond; Jacksonville; Dallas and many other cities.

Cincinnati, because of its central location between the Atlantic Seaboard and the Mississippi Valley and because it is the Gateway to the South, is served by 7 trunk lines formerly using 5 different terminals. The new terminal now efficiently serves these 7 lines.

Big Four

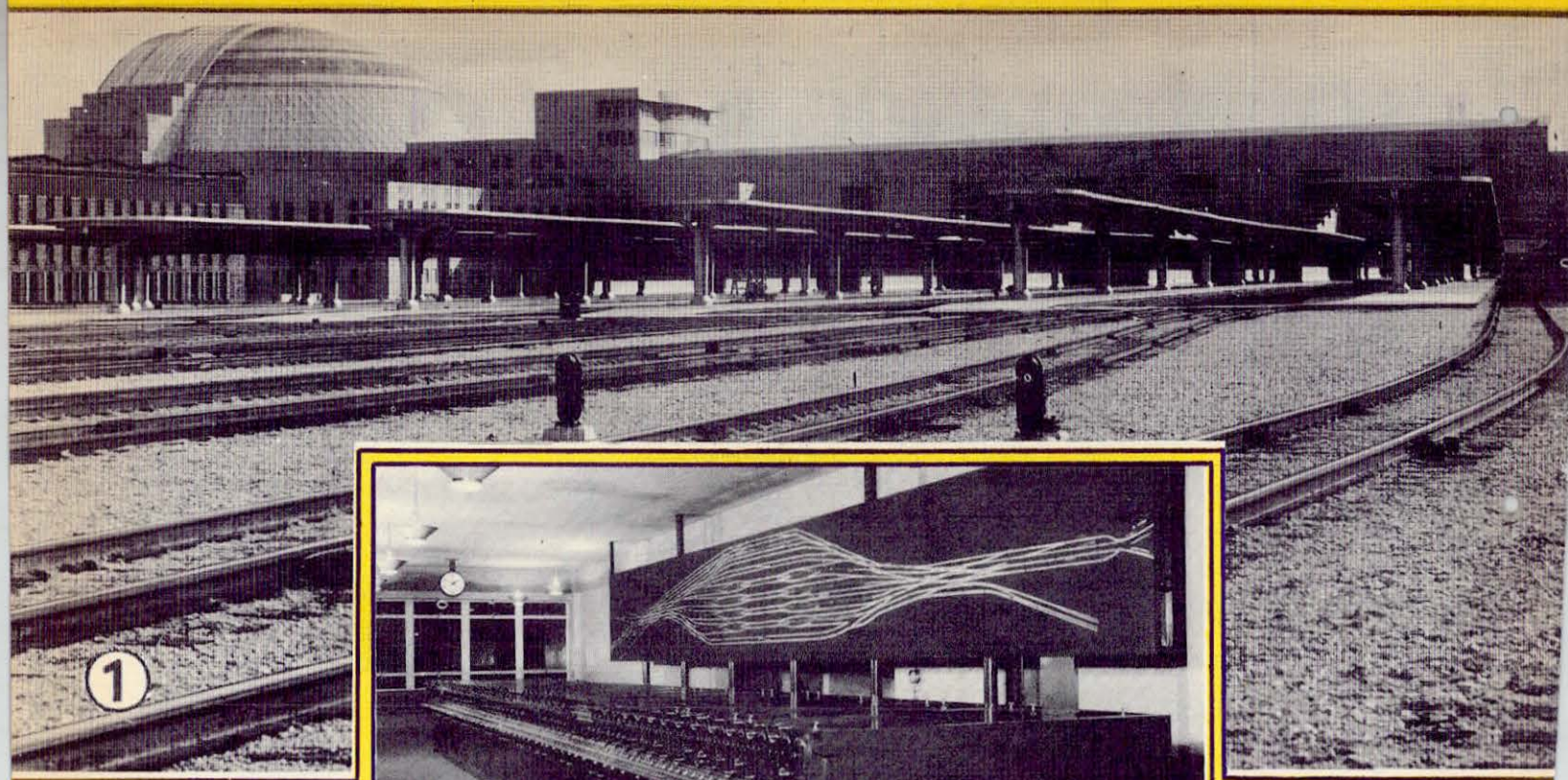


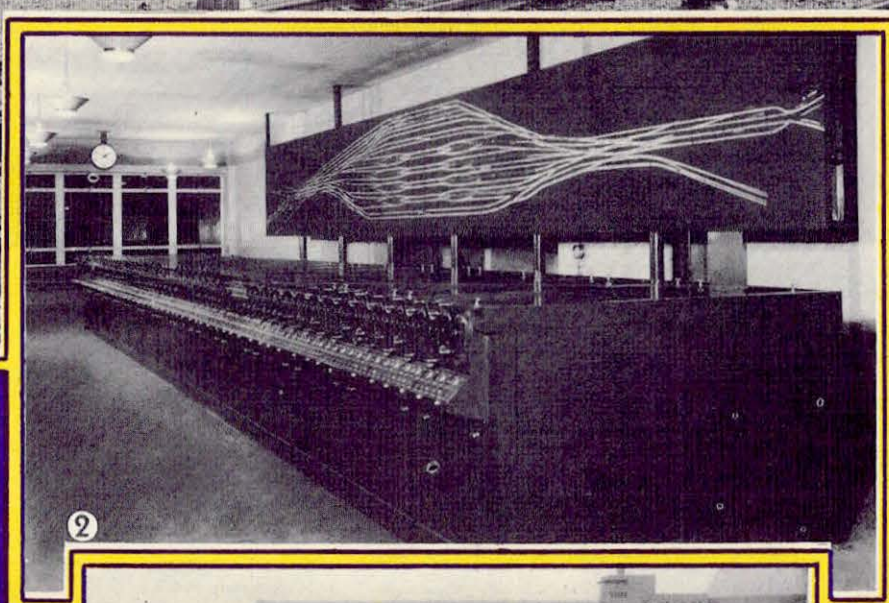
ECTRO-PNEUMATIC INTERLOCKING

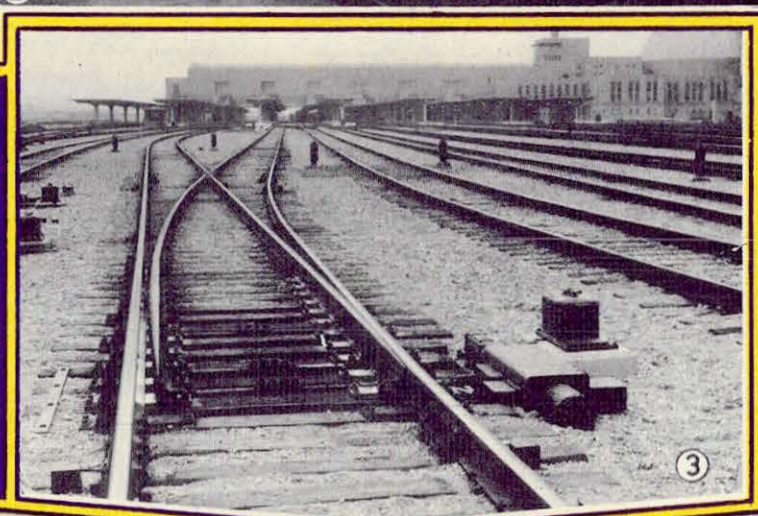
The interlocking machine, which provides for the safe handling of trains through the terminal, is located in the tower above the concourse at about the center of the interlocking limits which extend approximately three-fourths of a mile each way.

Some conception of the magnitude of the signal installation may be obtained from the following brief summary: The interlocking machine has 231 levers, the largest of its type now in service in America. The machine is 49 ft. in length and controls 70 single switches, 37 double slips, 4 derails and 149 signals. The track model is 42 ft. long, 5 ft. high and has 682 indication lamps.

Ask our nearest district office for additional details and why "Union" Electro-Pneumatic Interlocking is equally adaptable to the small isolated location as well as for the largest terminals.







1. The tower is located above concourse.
2. Interlocking machine and track model in control room.

3. A-5 single switch layout.
4. Part of the north throat.
5. Double slip layout with M.P.F. in south throat.

1881

TRADE MARK

Union Switch & Signal Co.

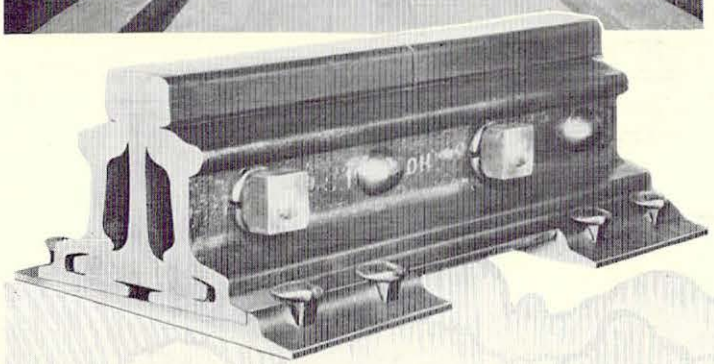
TRADE MARK

1933

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

CONTINUOUS HEADFREE RAIL JOINTS



Used in the

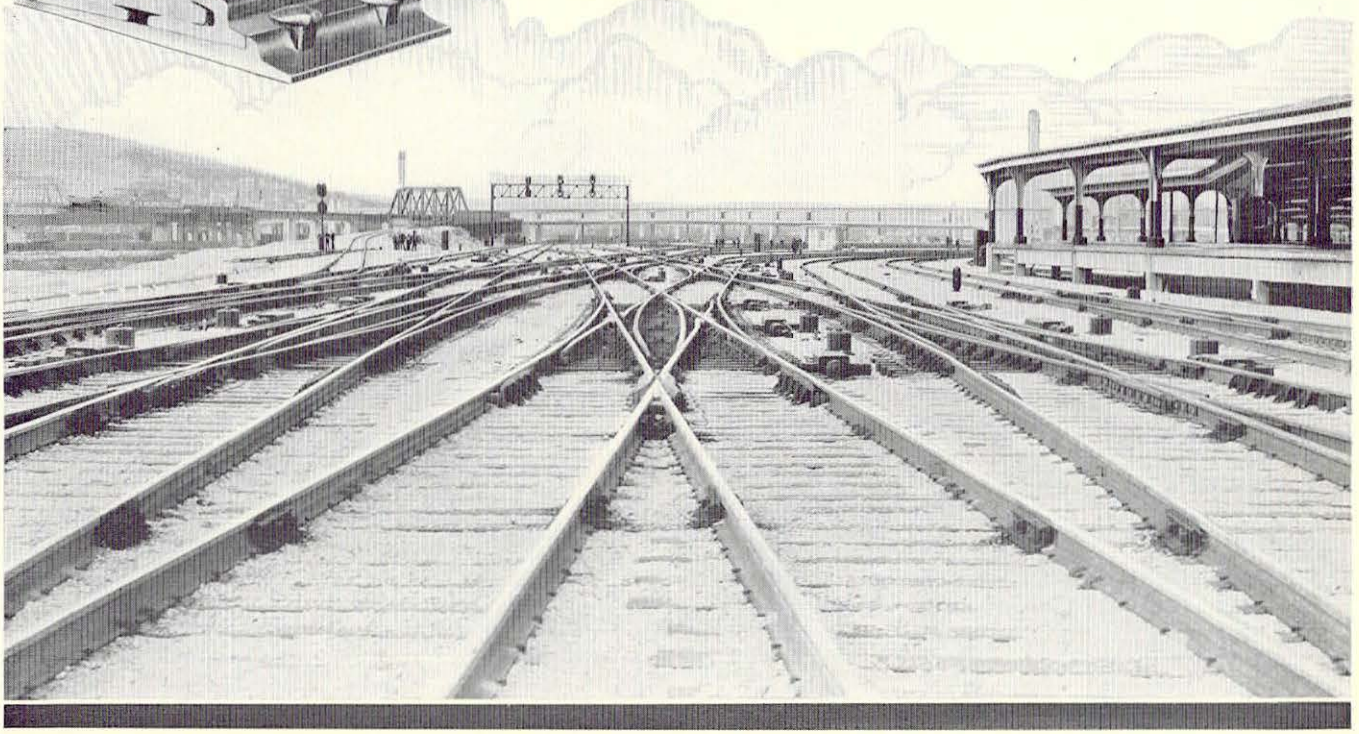
CINCINNATI UNION TERMINAL

THE demand for modern facilities in Railroad Transportation is amply taken care of both in Buildings and Trackwork where the most efficient devices of engineering skill are employed.

●

The Rail Joint Company

165 Broadway New York, N. Y.



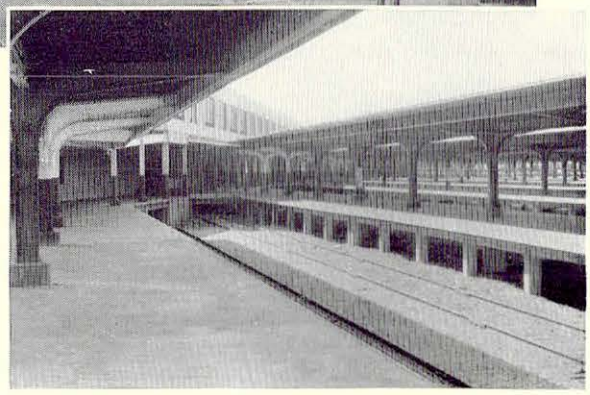
CONCRETE 250,000 CUBIC YARDS

QUALITY CONTROLLED!

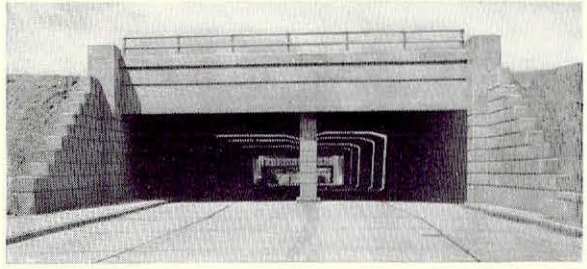
● *Western Hills Viaduct—includes flat slab construction (in the foreground), rigid frame concrete, concrete-encased structural steel, and two concrete arches (Soring Grove Avenue arch illustrated).*

CONCRETE is a dominant material in Cincinnati Union Terminal. Selected in a highly competitive market, it was weighed against every alternate.

Thorough inquiry determined concrete's superiority at every point of use. During construction, the quality of every cubic yard was fully controlled under a program planned and conducted by the Terminal Engineers, with the co-operation of the Portland Cement Association.



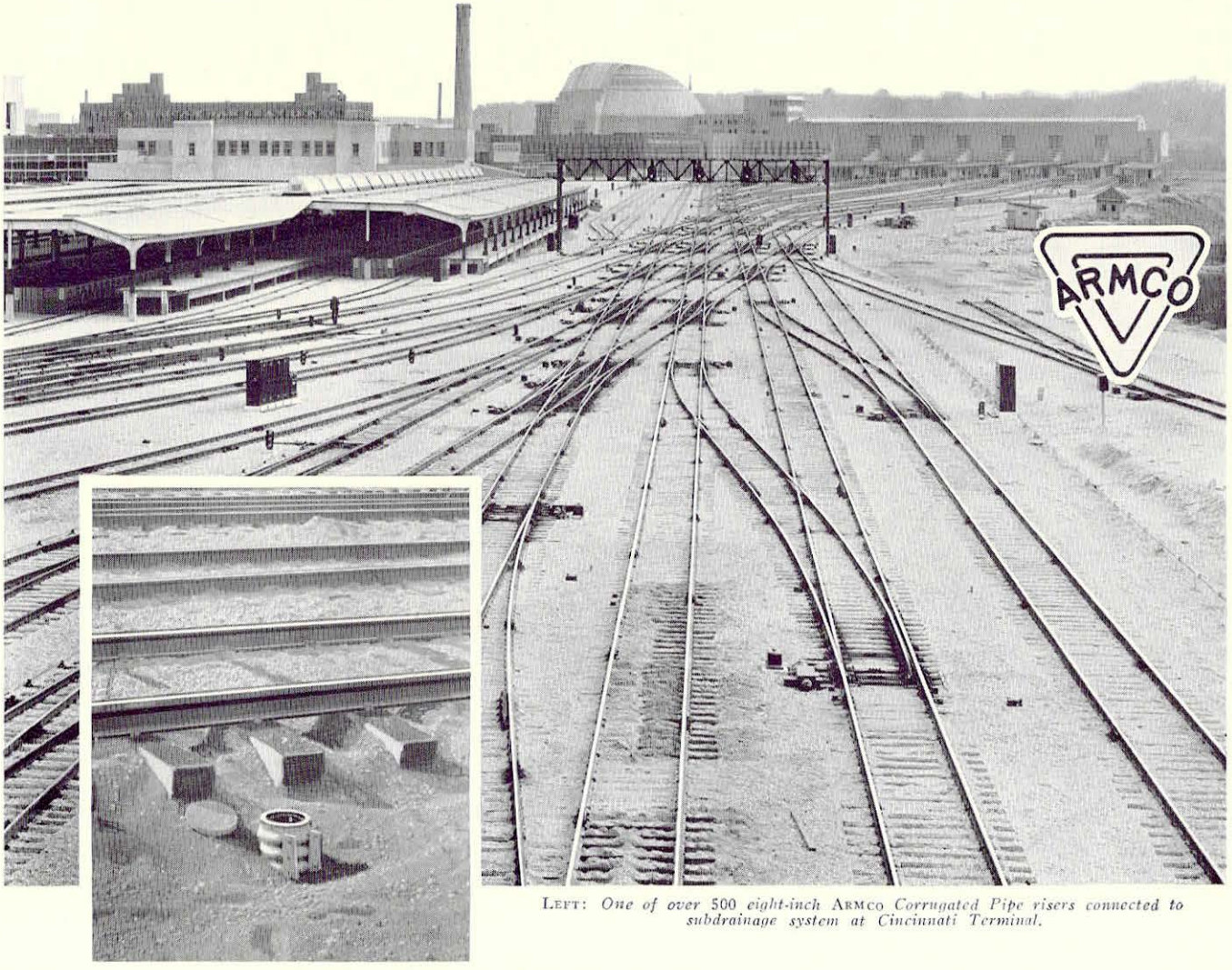
● *There are three miles of concrete platforms, ramps, and trucking passageways in the Terminal.*



● *Gest Street Underpass—rigid frame structure carrying eighteen tracks.*

PORTLAND CEMENT ASSOCIATION 33 W. GRAND AVE., CHICAGO
CONCRETE FOR PERMANENCE

ARMCO DRAINS



LEFT: *One of over 500 eight-inch* ARMCO *Corrugated Pipe risers connected to subdrainage system at Cincinnati Terminal.*

Chosen for
Its High Drainage Efficiency and Proved Durability

In vital territory where unfailing drainage is essential, ARMCO Perforated Iron Pipe is the choice of railway engineers.

ARMCO is pleased to have had a share in draining the splendid new Cincinnati Terminal and approaches.

Thousands of feet of ARMCO Perforated Pipe and fittings were used for protecting retaining walls and abutments of grade separation structures, station platform drainage, and yard subdrainage.

INGOT IRON RAILWAY PRODUCTS CO.

Middletown, Ohio **Berkeley, Calif.**

Philadelphia St. Louis Salt Lake City
Los Angeles Minneapolis Houston Portland
Atlanta Denver Chicago Dallas
El Paso Spokane

(Member of the Armco Culvert Mfrs. Assn.)

Of Course!

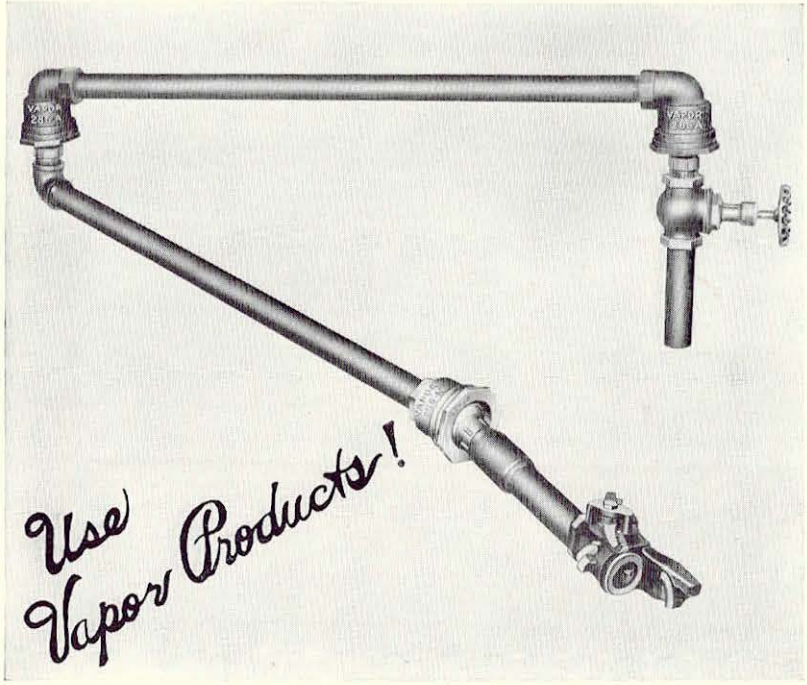
VAPOR COMPANY'S

FLEXIBLE METALLIC BALL JOINTS

WERE USED IN THE NEW

CINCINNATI UNION TERMINAL COMPANY'S

PASSENGER STATION AND COACH YARDS



A FEW of the dominant advantages of the Vapor Ball Joint . . . sturdy construction . . . only one gasket . . . no weight or strain on gasket . . . automatic "take-up" of gasket wear . . . gaskets easily changed when necessary without breaking the pipe thread connections . . . interchangeable with other similar size and type of joints

Vapor Ball Joints are desirable for any service requiring flexible connections for steam, water, air or oil lines

VAPOR CAR HEATING CO. Inc.

RAILWAY EXCHANGE, CHICAGO, ILLINOIS

CAR HEATING SPECIALTIES FURNISHED BY CAR HEATING SPECIALISTS

ASBESTOS • • ASPHALT • • MAGNESIA

Carey PRODUCTS • • used throughout the CINCINNATI UNION TERMINAL

For 60 years Carey Roofings, Insulations, Waterproofings and other specialties have exemplified standards of quality and value made possible by large facilities, control of raw materials, and extensive scientific research.

The Cincinnati Union Terminal provides convincing proof that Carey Products conform to the highest standards of the architectural and engineering professions, the materials listed below having been used in the construction of this outstanding project:

Carey Waterproofing Asphalts
Carey Waterproofing Felts
Carey Waterproofing Fabrics
Carey Roofing Felts (Feltex)
Carey Roofing Asphalts (Manco)
Carey Asphalt Planking
Carey Asphalt Emulsions
Carey Elastite Expansion Joint
Carey Plastic Cement
Carey Anti-Sweat Pipe Covering
Carey 85% Magnesia Heat Insulations
Carey Asbestos Heat Insulations
Carey Alumino Hi-Temp Heat Insulations
Carey Asbestos Cements
Carey Underground System of Pipe Covering
Carey Parkway Outlets

Roofing, Waterproofing, Terra Cotta Dome (the largest in the world), and Sheet Metal Work installed by

The Breese Bros. Co., Carey Contractors
Cincinnati, Ohio

Pipe Coverings and Insulating Materials applied by

R. E. Kramig & Co., Carey Contractors
Cincinnati, Ohio

• • •

The Philip Carey Company, Lockland, Cincinnati, Ohio
Branches in Principal Cities

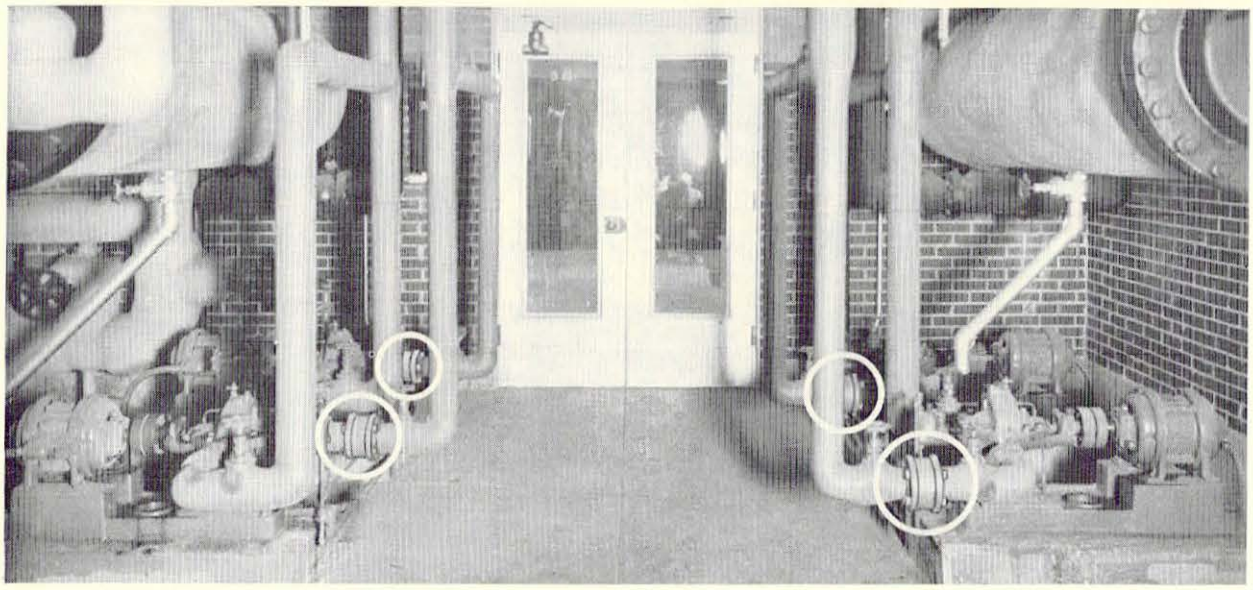
BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

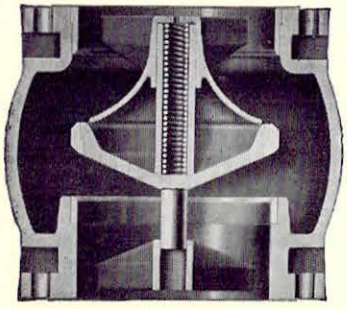
Carey PRODUCTS EST. 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CORRUGATED ASBESTOS SIDING
ASFALTSLATE SHINGLES
ROLL ROOFINGS

CINCINNATI UNION TERMINAL

HEATING — VENTILATING PLUMBING





Intermediate construction of Smolensky Radialflow Noiseless Check Valve. Valve open.

SMOLENSKY

Noiseless Flanged

and

Radialflow Noiseless

CHECK VALVES

Protect and Assure Efficient Operation of Pumping Machinery

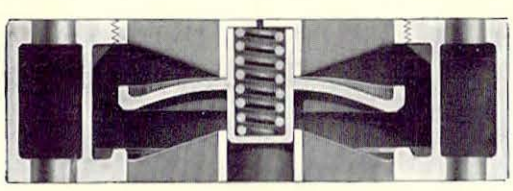
Outside view of Smolensky Radialflow Noiseless Check Valve for high pressures and temperatures.

BASED on the new trend of American industry, the installation of SMOLENSKY Noiseless Check Valves in Cincinnati's magnificent terminal was a foregone conclusion—they have been specified for practically every large building erected in the United States, Mexico, Canada and in many foreign countries. In large manufacturing plants, municipal water works, oil fields and many other industries SMOLENSKY Noiseless Check Valves will be found protecting the pumping equipment against static load on high head and preventing excessive maintenance costs by eliminating "water hammer", "breakage of pumps", pipe connections, etc. They are quick-tight closing and work absolutely NOISELESS.

THE SMOLENSKY VALVE CO.

Branch Offices in all principal cities

CLEVELAND, OHIO, U. S. A.



Intermediate Construction of Smolensky Noiseless Flanged Check Valve. Valve open.

Outside View of Smolensky Noiseless Check Valve.

THE A. R. BRUEGGEMAN COMPANY

1740 EAST 12th ST. CLEVELAND OHIO

In The New Engine Terminal AT CINCINNATI

MODERN engineering naturally selected BARCO FLEXIBLE JOINTS for the metal conduits required to furnish steam from the direct steaming system to the locomotive boilers in the new engine terminal at Cincinnati.

The economy, reliability and durability of BARCO JOINTS are outstanding factors which have been definitely proven in all kinds of service where flexibility, pressure-tight performance and low maintenance cost are the chief requirements.

Four 2″ BARCO JOINTS make up the single, combination flexible drops which are used for blowing down, refilling and steaming the locomotives to working pressure. Illustration shows one of these drops connected to a locomotive inside of the new engine terminal in Cincinnati.

Most of the leading railroads are saving money by the use of BARCO JOINTS in shops, roundhouses and on locomotive piping—Is your road on the list?

Barco Manufacturing Co.

1801 Winnemac Avenue, Chicago, Illinois
THE HOLDEN CO., LTD.
In Canada
Montreal—Moncton—Toronto
In Canada
Winnipeg—Vancouver

BARCO FLEXIBLE JOINTS

ONE of the new and outstanding features of the New Cincinnati Union Terminal is the supplanting of the old type of seating accommodations with luxurious chairs and benches upholstered with Genuine Full Grain Leather.

Both Men and Women's waiting rooms carry this new feature also, and the fact that these coverings represent the finest of Am-O-Tan products, lends distinction to this beautiful building.

THE AMERICAN OAK LEATHER CO.

Sole Producers of Am-O-Tan Leathers

CINCINNATI OHIO

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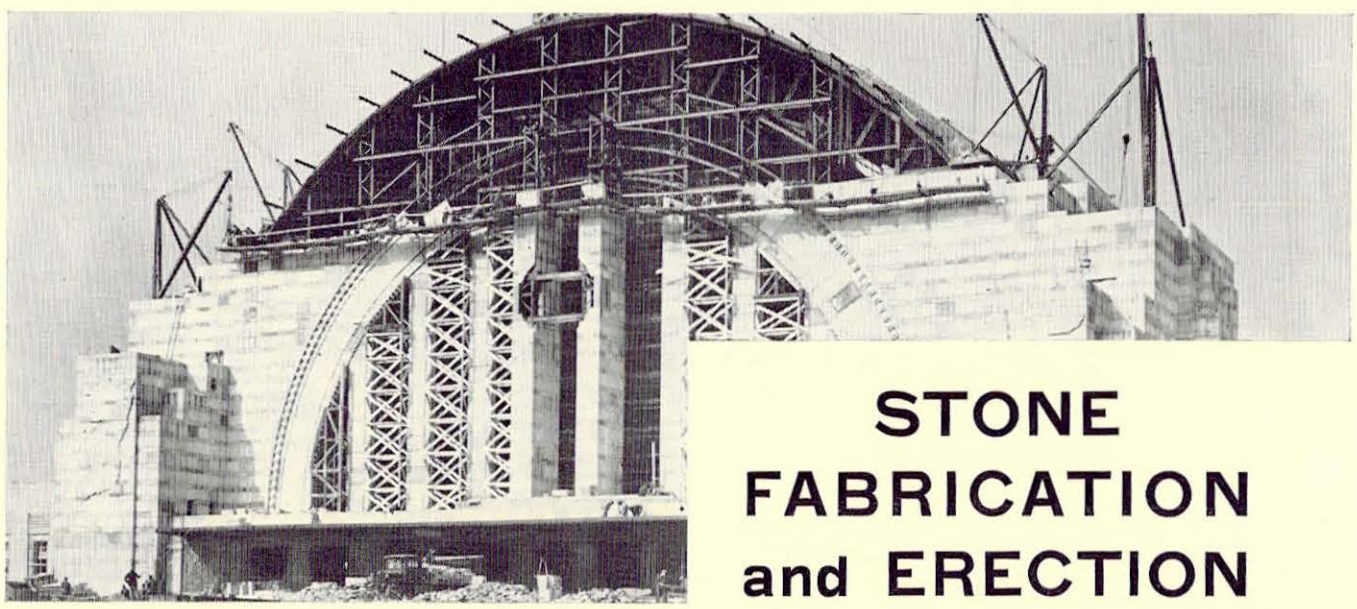


STONE FABRICATION and ERECTION

THE impressive Cincinnati Union Station stands as a monumental tribute to the lasting beauty of Indiana Lime Stone enhanced by the skilled craftsmanship of Hummel.

The Hummel organization, with its forty years of building experience, has participated in many large projects in Cincinnati and vicinity. It always adheres to specifications and schedules and is proud of its record of achievement as exemplified in this new magnificent railway station.

The DAVID HUMMEL BUILDING CO.

2629 SPRING GROVE AVE. . . . . CINCINNATI, OHIO

a broad-shouldered coat won't make a Dempsey out of a puny man. The name "iron," used as a cloak, never turned an imitation into the real thing.

When You Need REAL Iron—

Be Sure That You Get It!

There are certain railroad uses that demand *real iron*—genuine Puddled Iron, such as Reading makes. In these uses, no substitute metal, no metal which merely calls itself iron, will do the job so well. For genuine Puddled Iron is unique in its ability to resist a *combination of destructive forces* longer than any other metal.

Reading Puddled Iron has been known and used for four long generations. It has established records of endurance that are unequalled. It has received more thorough testing in actual service than any other kind of metal. That is why you are sure of satisfaction and economy when you use it for installations in which it can serve best.

For Staybolts

Reading Bar Iron possesses a fibrous structure found in no other metal. This structure gives Reading Staybolt Iron unique fatigue resistance. Unlike crystalline metals, Reading Staybolt Iron does not snap off sharply.

For Engine Bolts and Engine Bolt Iron Uses

Reading Engine Bolt Iron means *maximum* safety and protection when used for cylinder, frame and stud bolts, safety chain and other important parts for locomotives.

For Equalizer Bars

Reading Double-Refined Iron insures far greater length of service in the uses for which it is recommended, due to Reading's superior methods of piling and rolling. Among these uses are equalizers, forging billets, rivets, high grade chain.

For Chain

Reading Puddled Iron is furnished in all standard chain sizes. The *fibrous* structure of this iron assures maximum resistance to strain, vibration and metal fatigue.

READING PUDDLED IRON

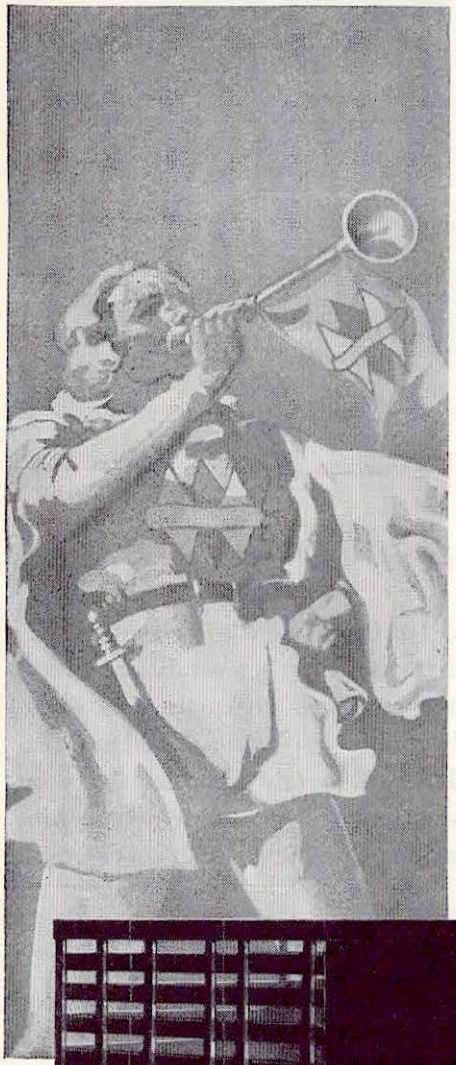
SINCE 1848

READING IRON COMPANY PHILADELPHIA

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

a Wonderful Value: INTERNATIONAL HARVESTER ANNOUNCES A NEW 2-TON TRUCK AT $995

for 145-in. wheelbase chassis, f. o. b. factory (tax extra)



OFFICIAL registrations on all new trucks of 2-ton capacity and over, sold in 1932, show that better than ONE *in every* FIVE is an International. This is nearly 22 per cent, yet 49 other manufacturers competed for this great market. The next nearest builder sold but half as many. In the heavy-duty truck field International *leads the field.* (Figures from R. L. Polk & Co.)

There are three reasons for such preference for Internationals in a year of careful buying: (1) long-lived efficiency, (2) operating economy, and (3) matchless International Harvester after-sale service.

* * * *

AND NOW INTERNATIONAL HARVESTER OFFERS YOU THIS GREAT 2-TON TRUCK VALUE, AT $995. Branches and dealers will be proud to show you this brand-new model, the B-4, which brings you at a remarkably low price the same high standards of quality in materials, engineering, and construction that made the International sales record possible.

The new B-4 is International-made—thoroughly modern from stem to stern. Note the brief description below. Visit one of our display rooms, get acquainted with this great 2-ton International value. And remember that International Harvester also offers parallel values in the smaller sizes, with a new Half-Ton, 6-Cylinder truck at $360, and a popular 1½-ton model at $615, prices for the chassis f. o. b. factory.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave. OF AMERICA (INCORPORATED) Chicago, Ill.

Model B-4 Features

Frame: 8-inch channel type; 7 sturdy cross members.

Engine: 6-cylinder. Bore: $3\frac{7}{16}$-in.; stroke, 4-in.; develops 63 h. p. Removable cylinders. Counterbalanced crankshaft. Exhaust-valve seat inserts. Full-pressure lubrication. Thermostatically-controlled cooling. Down-draft carburetion. Air cleaner.

Transmission: Four speeds forward, one reverse.

Universal Joints: Roller-bearing type.

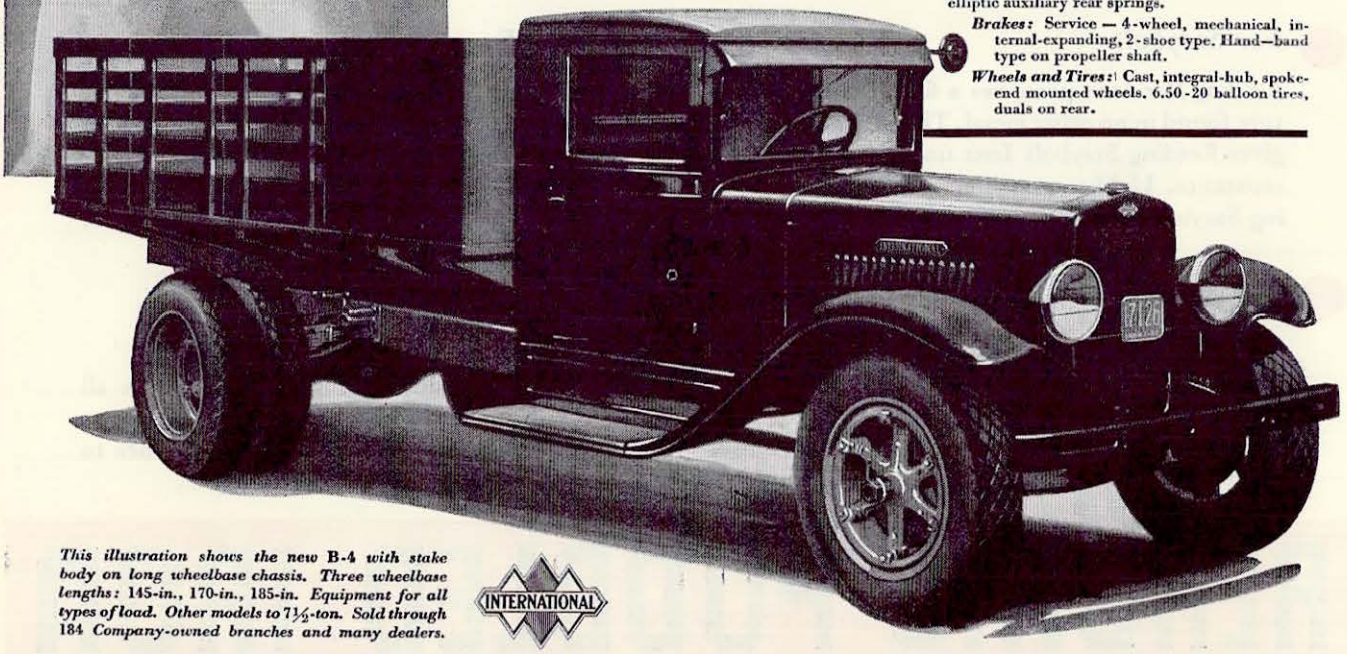
Steering Gear: Cam-and-lever type.

Rear Axle: Full-floating spiral-bevel-gear type. Straddle-mounted pinion.

Springs: Semi-elliptic front and rear, with semi-elliptic auxiliary rear springs.

Brakes: Service — 4-wheel, mechanical, internal-expanding, 2-shoe type. Hand—band type on propeller shaft.

Wheels and Tires: Cast, integral-hub, spoke-end mounted wheels. 6.50-20 balloon tires, duals on rear.

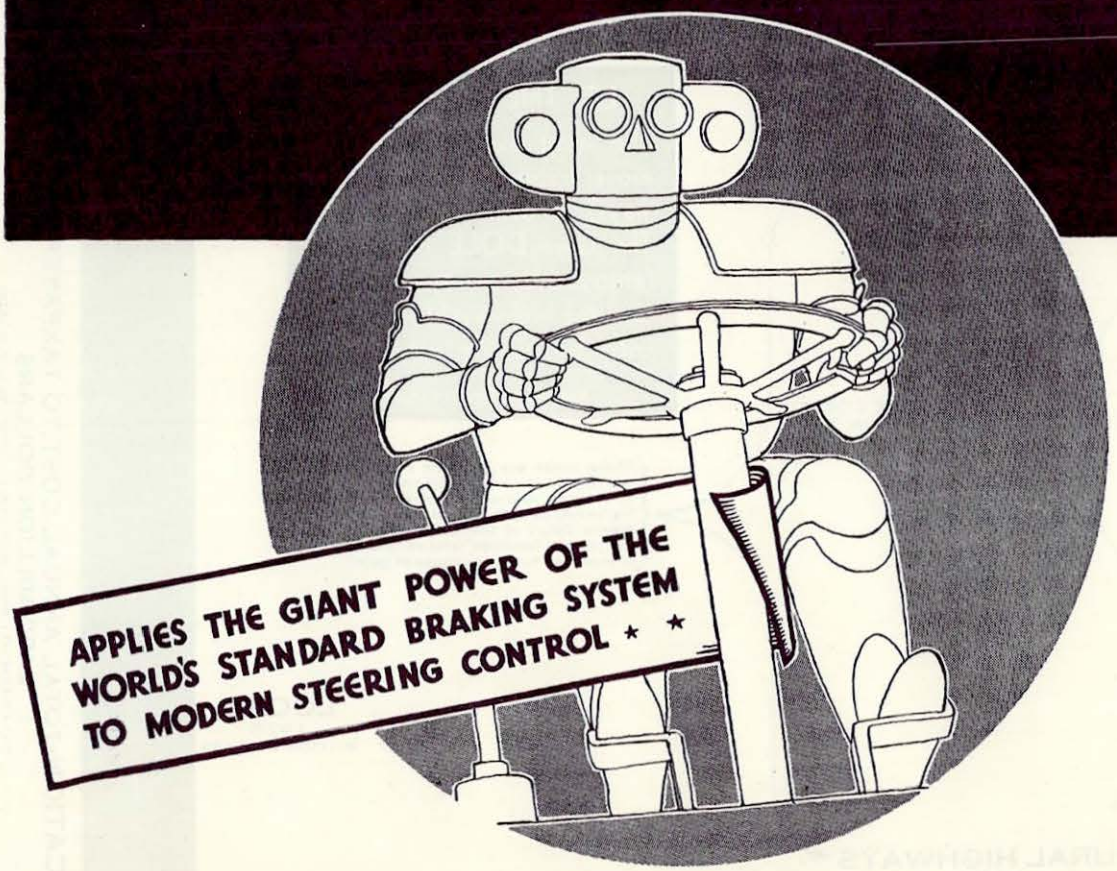


This illustration shows the new **B-4** *with stake body on long wheelbase chassis. Three wheelbase lengths:* 145-in., 170-in., 185-in. *Equipment for all types of load. Other models to* 7½*-ton. Sold through* 184 *Company-owned branches and many dealers.*

INTERNATIONAL

INTERNATIONAL TRUCKS

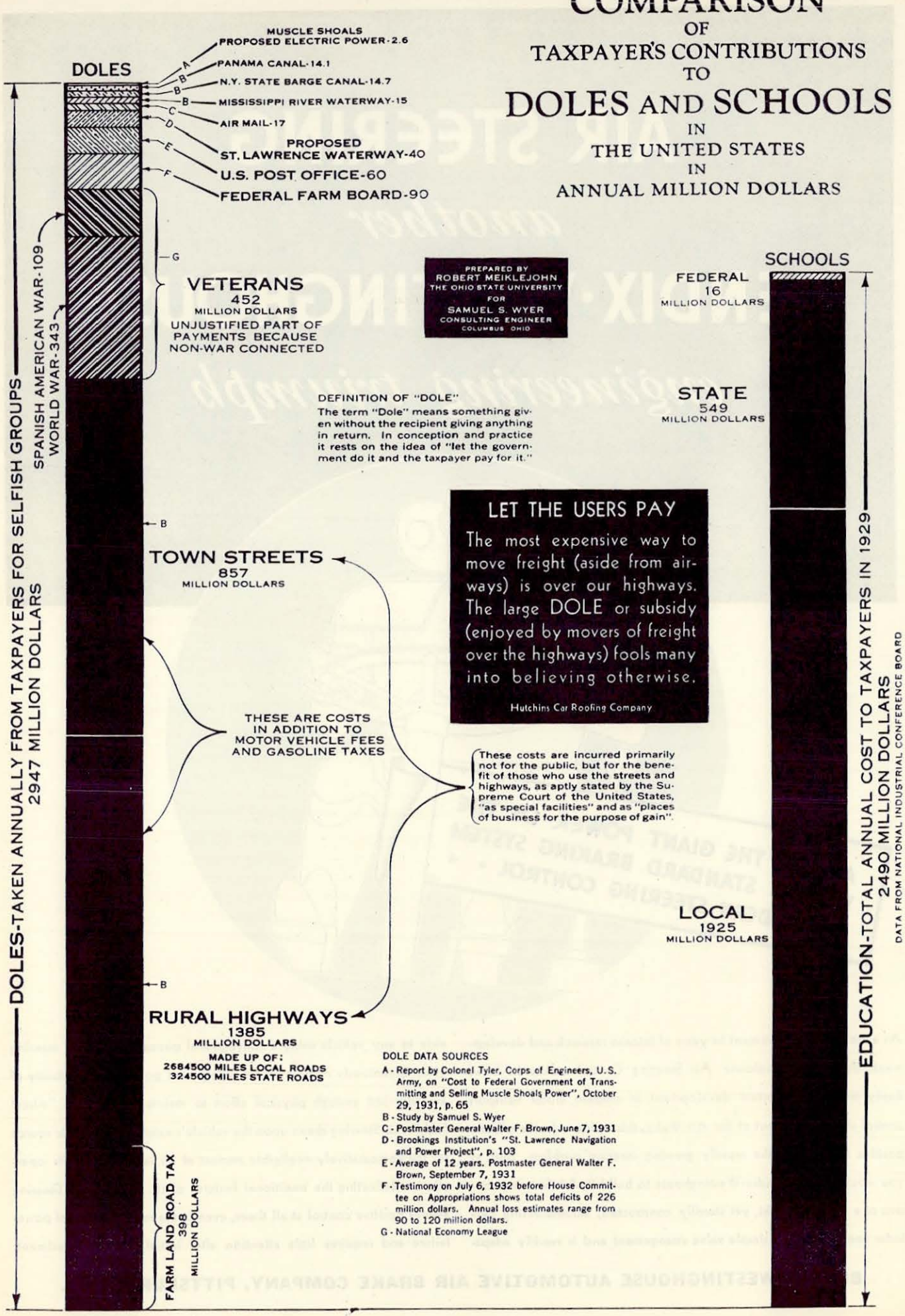
AIR STEERING
another
BENDIX·WESTINGHOUSE
engineering triumph



As a crowning acheivement to years of intense research and development, Bendix-Westinghouse Air Steering Control makes its bow. Easily the most important development in modern motor transport control since the advent of the Air Brake, this unique device offers a positive solution to the rapidly growing steering problem. Built as you would expect Bendix-Westinghouse to build it, Air Steering consists of a compact, light, yet sturdily constructed, double-acting cylinder controlled by a simple valve arrangement and is readily adaptable to any vehicle using a conventional manually-operated steering gear. Ingeniously combining the recognized power and flexibility of air, with just enough physical effort to maintain a desired "wheel feel," Air Steering draws upon the vehicle's existing pneumatic source for the comparatively negligible amount of air required for its operation. Reflecting the traditional features of its lineage, Air Steering assures positive control at all times, even in the remote event of power failure and requires little attention after initial, simple adjustment.

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY, PITTSBURGH, PA.

COMPARISON OF TAXPAYER'S CONTRIBUTIONS TO DOLES AND SCHOOLS IN THE UNITED STATES IN ANNUAL MILLION DOLLARS


DOLES
MUSCLE SHOALS PROPOSED ELECTRIC POWER-2.6
PANAMA CANAL-14.1
N.Y. STATE BARGE CANAL-14.7
MISSISSIPPI RIVER WATERWAY-15
AIR MAIL-17
PROPOSED ST. LAWRENCE WATERWAY-40
U.S. POST OFFICE-60
FEDERAL FARM BOARD-90
A
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D
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SPANISH AMERICAN WAR-109
WORLD WAR-343
VETERANS
452
MILLION DOLLARS
UNJUSTIFIED PART OF PAYMENTS BECAUSE NON-WAR CONNECTED
PREPARED BY ROBERT MEIKLEJOHN THE OHIO STATE UNIVERSITY FOR SAMUEL S. WYER CONSULTING ENGINEER COLUMBUS OHIO
SCHOOLS
FEDERAL
16
MILLION DOLLARS
STATE
549
MILLION DOLLARS
DEFINITION OF "DOLE"
The term "Dole" means something given without the recipient giving anything in return. In conception and practice it rests on the idea of "let the government do it and the taxpayer pay for it."
LET THE USERS PAY
The most expensive way to move freight (aside from airways) is over our highways. The large DOLE or subsidy (enjoyed by movers of freight over the highways) fools many into believing otherwise.
Hutchins Car Roofing Company
B
TOWN STREETS
857
MILLION DOLLARS
THESE ARE COSTS IN ADDITION TO MOTOR VEHICLE FEES AND GASOLINE TAXES
These costs are incurred primarily not for the public, but for the benefit of those who use the streets and highways, as aptly stated by the Supreme Court of the United States, "as special facilities" and as "places of business for the purpose of gain".
LOCAL
1925
MILLION DOLLARS
B
RURAL HIGHWAYS
1385
MILLION DOLLARS
MADE UP OF:
2684500 MILES LOCAL ROADS
324500 MILES STATE ROADS
FARM LAND ROAD TAX
398
MILLION DOLLARS
DOLES-TAKEN ANNUALLY FROM TAXPAYERS FOR SELFISH GROUPS
2947 MILLION DOLLARS
EDUCATION-TOTAL ANNUAL COST TO TAXPAYERS IN 1929
2490 MILLION DOLLARS
DATA FROM NATIONAL INDUSTRIAL CONFERENCE BOARD
DOLE DATA SOURCES
A - Report by Colonel Tyler, Corps of Engineers, U.S. Army, on "Cost to Federal Government of Transmitting and Selling Muscle Shoals Power", October 29, 1931, p. 65
B - Study by Samuel S. Wyer
C - Postmaster General Walter F. Brown, June 7, 1931
D - Brookings Institution's "St. Lawrence Navigation and Power Project", p. 103
E - Average of 12 years. Postmaster General Walter F. Brown, September 7, 1931
F - Testimony on July 6, 1932 before House Committee on Appropriations shows total deficits of 226 million dollars. Annual loss estimates range from 90 to 120 million dollars.
G - National Economy League

RAILWAY AGE

The Six-Hour Day and the Depression

A bill introduced by Senator Black of Alabama has been passed by the United States Senate to compel the establishment of a 30-hour working week (6 hours a day, and 5 days a week) in all large productive industries, manufacturing, mining, milling, etc. The reduction of working hours would be compelled by prohibiting interstate or foreign commerce in commodities produced in plants working their employees more than five days in any week or six hours in any day; and its purpose would be to reduce unemployment. Senator Black has also introduced a bill drafted by the railway labor leaders to establish a six-hour day for employees of all "operators of facilities of interstate transportation * * * subject to regulation under the interstate commerce clause of the constitution", and which would therefore apply not only to railways, but to all other classes of carriers by land and water, including coastwise steamships, boats on inland waterways and buses and trucks on highways. As both measures propose to limit working hours by the use by Congress of its power to regulate interstate commerce, neither would apply to industrial or transportation companies engaged entirely in commerce within a state, and therefore both would discriminate in favor of companies engaged entirely in commerce within a state. Whether Congress can constitutionally use its power to regulate interstate commerce in this way seems very questionable; and the economic expediency of federal legislation to reduce hours of work is equally questionable.

Working Hours in Industry and the Farm Problem

The present administration and Congress, like their predecessors since the war, have devoted much time, thought and effort to devising and trying measures for the solution of the farm problem. The major premise upon which all their reasoning has been based is that, because of economic developments since the war, there has been a prolonged disparity between the prices of the products of agriculture and the prices of the products of industry, as a result of which the purchasing power of the farmers has been made relatively much less than it was before the war. This view is strongly supported by comprehensive data given by Dr. Frederick C. Mills in his recent book, "Economic Tendencies", and the principal purpose of all past and proposed farm legislation has been, and is, to restore the purchasing power of the farmers. Many students of economics will be curious as to how the wise men in Washington can hope to reestablish the pre-war purchasing power of the farmers by new farm legislation, if it is to be accompanied by legislation to compel reduction of working hours in industry and transportation. It is true that the Black bill, by its terms, would remain in effect for only two years; but after the six-hour day had been in effect for two years it would be impossible to abolish it without a great political struggle and widespread labor disturbances.

Cost of Eight Hours' Pay for Six Hours' Work

Railway labor leaders have frankly admitted that, if successful in their movement for six-hour day legislation, they will expect railway employees to get for six hours' work their present pay for eight hours' work, and the bill introduced for them by Senator Black expressly provides that *"in the absence of agreement,* the compensation of employees * * * for a standard six-hour day shall not be reduced below the existing standard day's wage." There can be no doubt that employees in other industries that are now working on an eight-hour basis, especially those that are organized, would strongly resist efforts to make their hourly wages the same for a six-hour day as they are now for an eight-hour day, because this would result, of course, in a 25 per cent reduction of their daily pay. If there was no reduction in daily pay—in other words, if eight hours' pay were given for six hours' work—there would be either an immediate increase in operating expenses and costs of production or a reduction of employment in every industry in which the six-hour day was established.

The Interstate Commerce Commission was directed by Congress to investigate the effect upon operation, service and expenses that would be produced by the application of the principle of a six-hour day on the railways, and made its report on December 6, 1932. It concluded, after hearing witnesses for both the railways and the labor leaders, that the adoption of a six-hour working day, and payment of prevailing wages for an eight-hour day, would have, on the basis of the payroll of 1932, increased railway operating expenses

414 million dollars, or 17 per cent, and would have, on the basis of the payroll of 1930, increased them 630 million dollars, or 16 per cent. These increases in operating expenses would have been equivalent in 1932 to an increase in all railway rates of 13 per cent, and in 1930 to an increase in all railway rates of 12 per cent. Corresponding or greater increases in operating expenses and costs of production would be caused in manufacturing, mining and other industries if the reductions of working hours required by the proposed legislation were not accompanied by reductions of pay per day. Perhaps to prevent reductions in pay per day, President Roosevelt and Secretary of Labor Perkins have announced that they favor the enactment of minimum wage legislation.

"Restoring the Farmers' Purchasing Power"

If costs of production in manufacturing and other industries, and the operating expenses of railways and other carriers, are to be increased by hours of labor and minimum wage legislation, how are the prices and freight rates that the farmers must pay for the commodities and transportation they must buy going to be prevented from being so increased as to nullify any tendency that increases in the prices of farm products may have to restore the farmers' purchasing power? It may be answered that the increases in the payroll and operating costs of manufacturers, mine operators, railways and so on, would not result in increases of their prices and freight rates because the increases in payrolls and operating expenses would be made at the cost of reductions of profits. But the railways in 1930 earned only 885 million dollars net operating income, and therefore a six-hour day at eight hours' pay in that year, according to the estimate of the commission, would have cost an amount which would have wiped out more than 70 per cent of their net operating income. The railways in 1932 had only 334 million dollars net operating income, and therefore a six-hour day at eight hours' pay, according to the estimate of the commission, would have left them last year with 80 million dollars less than no net operating income at all, and with about 600 million dollars less than the amount of income required to pay their fixed charges.

Most of the manufacturing and other industries of the country that are engaged in interstate commerce, like the railroads, even in years of prosperity could not have stood establishment of a six-hour day at eight hours' pay without increasing their prices, and most of them, like the railroad industry, are now "in the red." Just how it would help to revive business to put them much more deeply in the red is somewhat difficult to surmise. There are still a few economists left who believe that one of the principal essentials to a revival of business is the balancing of all budgets, those of both government and business, and who therefore doubt if it is desirable to increase the operating expenses of all large private business concerns when most of them are operating at a loss.

As to the future, it is difficult to understand how there can be any doubt in the mind of any intelligent man as to the effect that would be produced upon the relations between transportation, industry and agriculture by legislation establishing a six-hour day and minimum wages in transportation and industry. The inevitable effect would be to make higher than they would be in the absence of such legislation the prices and freight rates the farmers would have to pay for the products and transportation they would have to buy, and thus to perpetuate, and even increase, the present disparity between industrial prices and freight rates, on the one hand, and farm prices, on the other, which has been and still is responsible for the farmers' lack of buying power.

The past and present curtailment of the farmers' buying power has curtailed the market for transportation and industry, and probably has been the principal cause of the inability of many industries to sell all they could produce, and, consequently, of the so-called "over-production" in industry which has caused unemployment in industry and on the railroads. It would appear, therefore, that legislation tending to increase what the farmers must pay for transportation and industrial products would tend to increase and perpetuate so-called "over production" and unemployment in industry and transportation, rather than to remedy them.

"Capital Goods" Industries and the Six-Hour Day

The depression and its long duration have been caused by economic maladjustments owing to which some large industries and classes of persons became unable, and have continued to be unable, or have not been given sufficient incentive, to buy the products of other large industries and classes of persons. Relatively, the largest declines of purchases, production and employment have occurred in the "capital goods" industries—that is, those which make things not for immediate consumption, but for use in the production of consumable goods. The decline in the freight business and earnings of the railways has been principally due to the terrific decline of activity in the "capital goods" industries, and the decline in employment on the railroads has been second only to the decline of employment in the "capital goods" industries. A revival of activity in the "capital goods" industries is, therefore, the principal thing needed to cause an early revival of general business and increase of employment; and yet the "capital goods" industries and the railroads would be the hardest hit by reduction of the hours worked per day by employees if unaccompanied by corresponding reductions of daily rates of pay.

While labor organizations will strongly oppose reductions of daily rates of pay, no logical argument can be advanced for reduction of the working day as a means of reducing unemployment and reviving business excepting upon the assumption that reduction of the working day will be accompanied by reductions of daily pay. The introduction of bills in Congress intended both to increase farm prices, and to reduce the work-

ing day in industry without reduction of the pay for a day's work, shows that some politicians are still trying to win the favor of both farmers and workingmen by advocating measures which have entirely incompatible purposes, and which would tend to prevent the very readjustments most needed to revive business.

An Object Lesson

A salesman handling a highly competitive product had a manufacturer customer who purchased his product in considerable volume. It was one of the manufacturer's raw materials.

During the course of their business relationship, which was of long standing, the men became friends and a feeling of mutual confidence grew up between them. A week seldom passed that they did not lunch together.

Whenever the manufacturer received a rush order on which he had to make quick delivery, he did not hesitate to call up the salesman at his home on Sundays, or after business hours during the week, and ask for an early morning delivery on goods from the warehouse of the salesman's company. He sometimes followed the same course to take advantage of a change in the market. The salesman always arranged to have the trucks loaded by six o'clock in the morning so that the material would be at the factory before the day's work began.

But the salesman in time became aware that he was getting less and less of the manufacturer's business. He knew that the manufacturer was receiving the bulk of his requirements from a competing house which had no warehouse facilities in the manufacturer's territory. Business being pretty thin, this house was aggressively after orders outside its own territory. Its only weapon was price cutting. The salesman, not being disposed to ruin the business of his company in its best territory by entering on an orgy of price cutting, ceased to call upon his manufacturer friend and they did not see each other for some months. Then one day the manufacturer called him up. Wanted to know where he had been keeping himself; had missed him; asked him to lunch.

It developed that the manufacturer had been having his troubles. Not the quality of the goods in this case. That was all right. But deliveries! Having gone outside its regular territory to increase sales volume at cut rates, the company to which the manufacturer had transferred his business was not equipped to give quick deliveries in this territory and not disposed to provide more than routine handling on cut-rate business. Slow delivery of raw materials had caused the manufacturer to fall down on a delivery date, jeopardizing the future of an important account at a time when business is hard to get and hard to keep.

Now the manufacturer, being a close buyer, at first was a bit cagey about showing his hand when the two friends met at lunch. He tried again to get the salesman to shade his price below the market. The salesman knew the danger involved in embarking on a program of secret concessions, which somehow never long remain secret. Sensing the manufacturer's difficulty, he stood his ground. In the end, he got back most of the business.

Yes, there's a moral to this tale: Be careful, when chasing pennies, that the dollars don't walk out on you.

Alert British Road Adapts Services to Shippers' Needs

The ever-alert Great Western of Great Britain has provided a new example of what enterprising railways can do to co-ordinate rail and highway freight operations and thus meet threats of motor carrier competition with offers of complete transport services, suited to the differing requirements of patrons. The Great Western, as pointed out from time to time in *Railway Age,* operates railhead distribution centers and over-the-road trucking routes; it provides co-ordinated collection and delivery services for farms and off-rail villages and engages in contract trucking; it has specially-designed highway vehicles to handle special traffic and it will undertake the entire job of moving household goods, including packing, unpacking, etc.

Now we learn of the co-ordinating plan set up by the Great Western to meet the transport needs of one of its large milk shippers—the Nestlé and Anglo-Swiss Milk Company. The plan, as outlined in a recent issue of the Railway Gazette (London) involves, in brief, the location of a large milk receiving station at a strategic on-rail point where milk, collected daily from some 600 farmers, is consolidated into tank-car loads for further movement by rail. The Great Western provides the co-ordinated highway transport facilities for this milk collection plan which extends to farms scattered throughout the county of Cornwall.

The hub of the set-up is at Lostwithiel where the Nestlé concentration station is located; it is the task of the collection service to gather and deliver at Lostwithiel some 7,000 gallons of milk daily, including Sundays. While the greater number of trucking routes radiate from Lostwithiel there are nine other points out of which trucks operate. Milk hauled into these minor points is dispatched to Lostwithiel by large trucks or by rail whichever has been found more efficient. Originally these movements from the minor concentration centers to Lostwithiel were entirely by highway but experience developed the desirability of making some of the transfers by rail. Another feature of the plan is a definite scheduling of the trucks which avoids delays at farms.

As the Railway Gazette points out the Great Western has shown "remarkable transport enterprise" in providing a complete and specialized service to meet the

requirements of a particular type of traffic. Also, there can be no disagreement with the Gazette's next suggestion that "The successful operation of the plan gives impressive evidence of what can be done by using two forms of transport, each in its appropriate sphere. It is co-ordination in the true sense of the word. . . ."

More Passenger Terminals

Extended attention is given on following pages to the new passenger terminal which has just been opened at Cincinnati, Ohio, for the use of the seven railways serving that important gateway. These facilities reflect a high order of engineering skill. The station building is especially outstanding in the completeness of its appointments and in its architectural treatment. The project may truly be said to represent the last word in passenger terminal construction.

Will it be the last of its kind? This question has been answered in the affirmative by more than one railway officer who views the future of the passenger business with dismay. Confronted with a decline of nearly 65 per cent in passenger traffic during the last 13 years, and with the end of the decline apparently not yet in sight, and recognizing the tremendous cost of these facilities (the terminal in Cincinnati cost $41,000,000), it is not surprising that such an attitude should be encountered. Yet is it warranted by the facts? Let us look at the situation.

Such a survey brings to mind at once the still larger terminal that is now nearing completion at Philadelphia. This project, which the Pennsylvania expects to complete next year, will involve a total outlay of more than $60,000,000, exclusive of electrification. There is also the monumental project of the Canadian National at Montreal which, as planned, will involve an expenditure of more than $50,000,000 and on which a large amount had been spent before the depression forced a suspension of activities slightly more than a year ago.

At the other extremity of the country, civic authorities at Los Angeles have been endeavoring for several years to compel the railways serving that city to provide a new union station, with some hope of success. At Pittsburgh, the Pennsylvania has been working for some time on plans for the reconstruction of its passenger facilities, and, together with the city, has already done considerable work in the rearrangement of facilities preliminary to the major project.

In Chicago, the terminal problem has been very much before the so-called south-side roads for some years. Foremost among the projects under consideration is the proposed station of the Illinois Central, the last step in its $100,000,000 terminal reconstruction and electrification program undertaken more than ten years ago. Also prominently before the public and the railways is a proposed terminal or terminals to serve the roads now using the Dearborn, LaSalle Street and Grand Central stations, a project variously estimated to cost from $50,000,000 to $100,000,000.

Among less pretentious projects may be included that of the Southern Pacific at Houston, Tex., for which considerable amounts have already been spent for land, etc., and for which the road has recently asked the Reconstruction Finance Corporation for a loan of $1,500,000 to complete the station itself. Somewhat less definitely formulated, but publicly announced by their respective managements, are a new station for the Baltimore & Ohio at Philadelphia, Pa., and new facilities for the New York Central at Syracuse, N. Y., while the Illinois Central has made detailed studies for a new station at New Orleans, La. Nor are these all of the projects that are on the horizon. When they will materialize depends, of course, on numerous conditions, most important of which is the return of normal business conditions.

These projects which are definitely in the minds of railway managements are sufficiently numerous to demonstrate that the construction of passenger terminals has not ended with the completion of the magnificent facilities at Cincinnati. Rather, modern railways are constantly in a state of development, never finished but always undergoing revision to keep abreast of the time. There will, therefore, continue to be new passenger terminal construction, as there will be construction of other facilities, so long as the railways continue to render the major transportation service of the country.

Barge Cargoes Largely Hot Air

The captain stroked his gray mustache and grinned at me. He has been guiding vessels up and down the Mississippi for more than half a century. He is now piloting one of the Inland Waterways Corporation's freight vessels.

"Sure, it had a full cargo," he said. "It had a hundred per cent cargo of Minneapolis hot air."

He had been telling me about a trip down the river on which he had encountered considerable difficulty.

"We were towing three barges," he continued. "Each of them had a capacity of two thousand tons, six thousand in all. Our cargo weighed a hundred and seven tons. The barges were so light we couldn't control them when the wind came up. We went aground twice."

The captain's story explained a number of figures that had been puzzling me. For instance, I knew from observation that a good many barges passed up and down the river last Summer, that many of them put in at Rock Island, that their capacities were large. But the figures prepared by the city showed that, during all of 1932, only 8,190 tons of freight had been handled at the municipal barge terminal. Just one good-sized capacity load in a whole year! . . .

The Mississippi is only one of several rivers involved in the canalization plan and the operations of the Inland Waterways Corporation. In this era of belligerent demand for government economy, the nation is embarked on a fruitless project that, if carried to its conceived conclusion, will eventually cost more than a billion dollars.

John Alroy in the American Mercury.

The East Front of the New Station

Cincinnati's New Union Terminal Now in Service

This $41,000,000 facility, which serves all seven of the railroads entering the city, embodies many departures from conventional design

By Walter S. Lacher*
Engineering Editor, Railway Age

INITIATIVE, imagination and engineering skill, motivated by a courageous confidence in the essential soundness of railway transportation and a capacity for united action, are exemplified in the newest of America's great passenger terminals, which was formally placed in service at Cincinnati, Ohio, on April 1. Completed within three and one-half years from the time that work was started, at a cost of $41,000,000, the terminal embraces many features of an outstanding character that lend credit to those who conceived it.

It is truly a "union" terminal, since it is jointly owned and used by all seven of the railways that serve the city, and it has led to the abandonment by them of five existing passenger stations. The site selected for the new terminal, while remote from any of the existing stations and requiring the extensive vacation of railway freight terminals, together with a 5½ million yard grading job, afforded unusual opportunities for the development of an adequate, convenient and flexible arrangement of the facilities, which include not only a station serving all passenger trains that enter and leave Cincinnati, and railway auxiliary mail and express terminals, but also an engine terminal and a coach yard to serve the equipment of all roads but one. Finally, in the station building itself, one finds a departure from all traditions in station architecture with a result so remarkable that it must be seen to be fully appreciated, and this also, at a marked saving in cost compared with a structure of classic or applied classic designs such as have been employed in most of the monumental stations built heretofore.

A Perplexing Problem

The problem presented at Cincinnati is not unlike that which confronted the railways at Kansas City, Mo., nearly 30 years ago, namely, that of finding a site accessible to all the lines entering the city in the face of severe topographical obstacles, for as at Kansas City, the lines of approach are confined to the banks of a great river and to the valleys of the smaller streams flowing into it. However, owing to the greater physical obstacles, the railroads at Cincinnati had not previously succeeded in developing a common passenger terminal, but used five stations.

Passenger Traffic at Cincinnati

In 1928, the number of passengers entering and leaving Cincinnati averaged 17,000 to 20,000 daily, and they were handled in 108 inbound and 108 outbound trains, with the use of about 1,100 passenger cars. Of the railroads serving Cincinnati, only one, the Baltimore & Ohio, operates passenger trains through the city; for all the others Cincinnati is a terminal point. Because of this, Cincinnati has long been an important point of interchange for through sleepers—between the Pennsylvania and the Cleveland, Cincinnati, Chicago & St. Louis entering the city from the north, east and west, and the Louisville & Nashville, the Norfolk & Western, the Southern and the Chesapeake & Ohio from the south and east. As a result, the operation of separate stations has been a serious handicap in the interchange of these through sleepers which amounts to from 50 to 60 cars per day, and has been the reason why the Louisville & Nashville was compelled to operate part of its trains in and out of one station and the remainder from another.

The possibilities of a union station were discussed for many years, but any plan proposed was confronted not only with the physical difficulties that had beset the railroads when they built their lines into the city, but also those resulting from the intensive industrial development of nearly all usable lands adjoining railway property. It remained for a group of Cincinnati citizens under the leadership of George Dent Crabbs, president of the Philip Carey Company, to bring the railways and the city government to a "meeting of the minds" which

* The section of the article devoted to the interlocking facilities was prepared by John H. Dunn, signaling editor, *Railway Age*.

was eventually fruitful in the selection of a site and the adoption of a plan for a union terminal leading to the incorporation of the Cincinnati Union Terminal Company, the common stock of which is owned by the participating railways, which in turn have guaranteed the bonds issued to finance construction. In addition, there is an issue of $3,000,000 preferred stock.

The Location

As seen on the map, the selection of any common site would necessarily favor either the Norfolk & Western and the Pennsylvania, and be unfavorable to the other roads, or vice versa. But the site chosen, in the Mill Creek valley, (1½ miles west of the business center) which affords direct access by the B. & O., the Big Four, the C. & O., the L. & N., and the Southern, possessed so many obvious advantages over any other site proposed, that the Pennsylvania and the N. & W. readily assented to its adoption although it involves their use of the B. & O. from a connection in the northeastern part of the city, a line distance of almost six miles. However, the distance traversed over this route to the new station is not appreciably greater than to the old Pennsylvania station from the same point.

The development of the site agreed upon was not without its obstacles, chief among which was that it was occupied by a classification yard and local freight terminal of the Southern, a fact that was responsible for no little delay in appreciating the possibilities of the location. But this difficulty was overcome by reconstructing this yard and contiguous facilities on a new site immediately to the west. Another serious drawback to the location was its low elevation, giving rise to the placing of some 5½ million cu. yd. of filling, but these difficulties had their compensation, for the fact that part of the ground was occupied by railroad yards and much of the rest of it was so low as to be unattractive for other use, simplified the problem of street crossings. Although street grade separation structures introduced an important element in the cost of the project, they are confined to locations near each end of the area; no streets cross either under or over the terminal property in a distance of more than 6,000 ft.

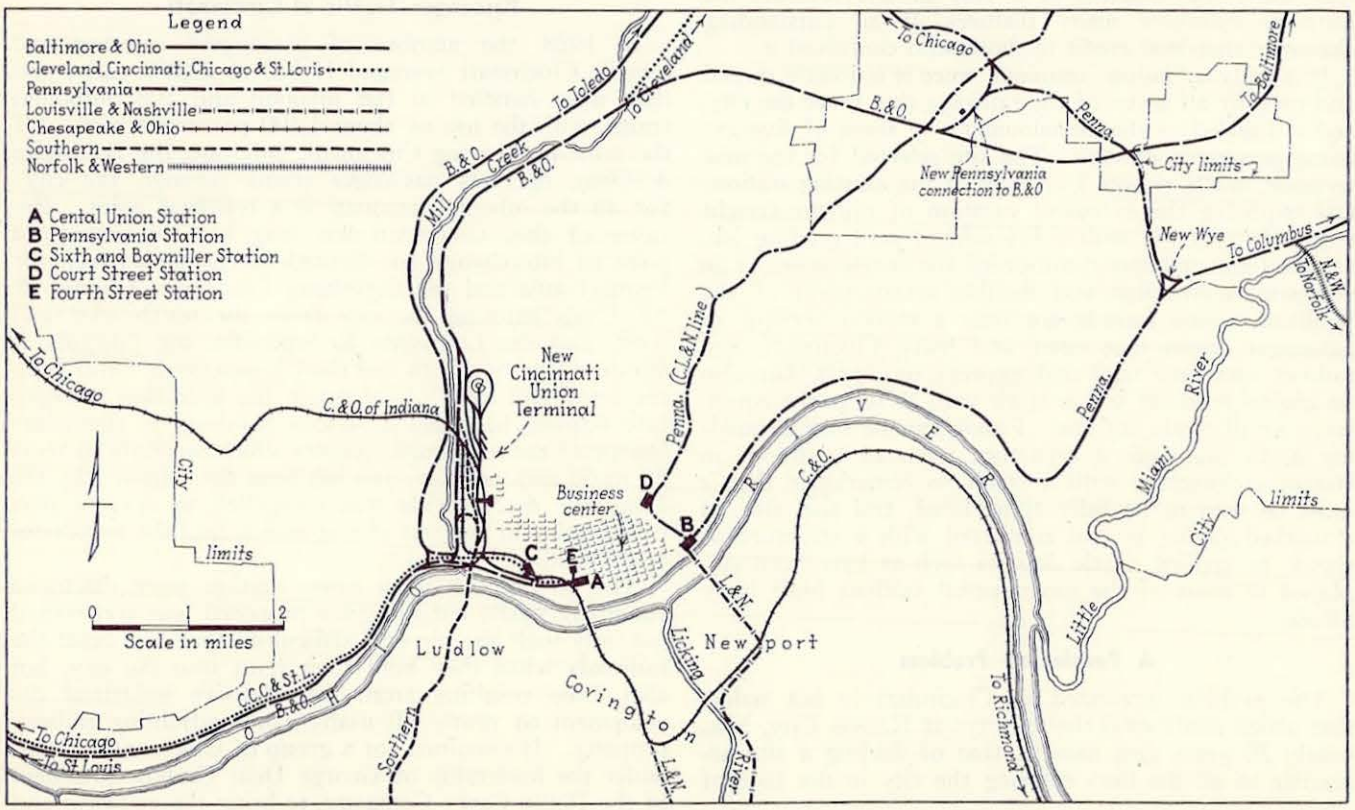
The Plan

The terminal is of the through type with a connection at the north end with the Baltimore & Ohio line in Mill Creek valley, which is used by the trains of that road and those of the Big Four to the north and east, and all trains of the Pennsylvania and the Norfolk & Western. At the south end there are three separate connections, namely, one directly to the north end of the Southern's bridge, a southwest connection with the Baltimore & Ohio and Big Four lines that follow the north bank of the Ohio river to the west, and a southeast connection to the north end of the Chesapeake & Ohio bridge for the use of the trains of that road and the Louisville & Nashville. A fifth connection, almost in the middle of the layout, is provided for the Chesapeake & Ohio of Indiana.

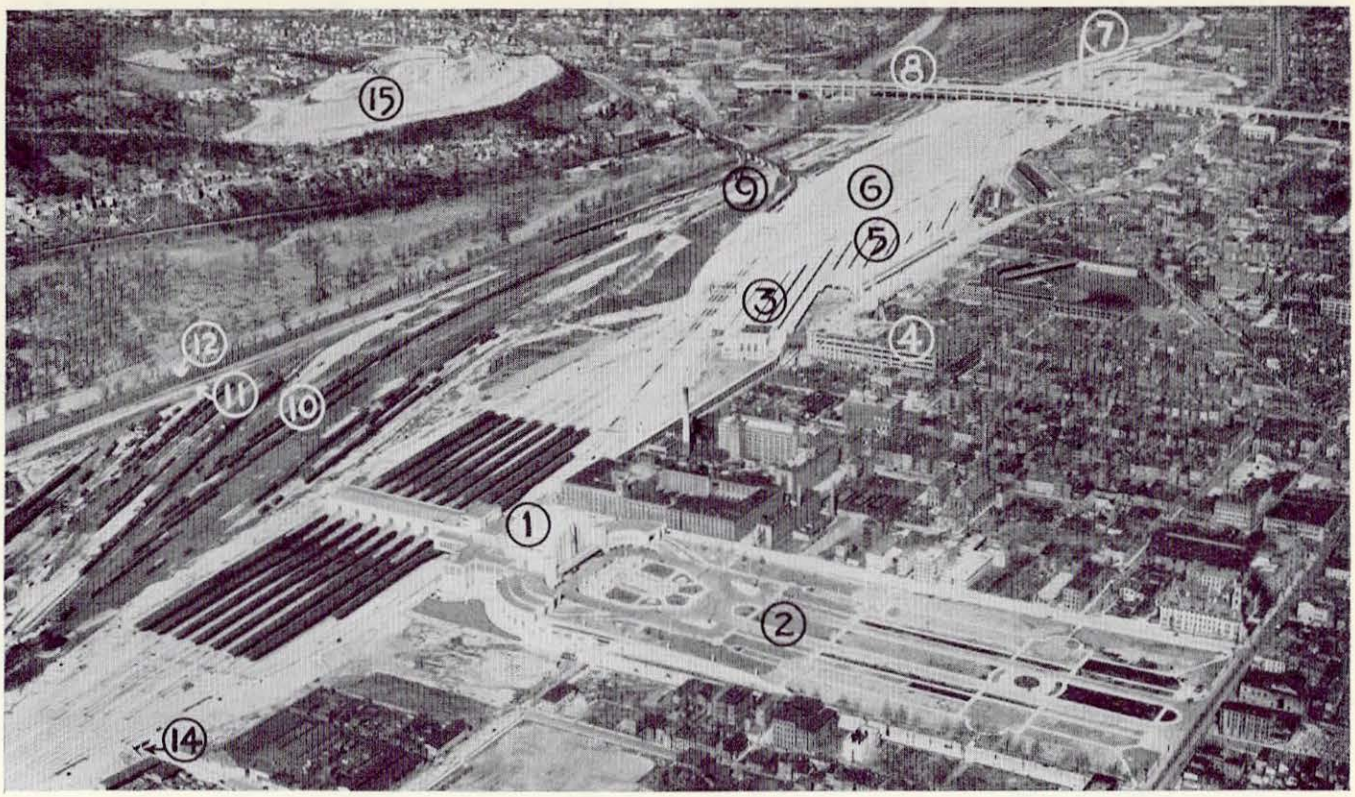
Having adopted the through track plan, it was necessary to provide a station of the two-level type, the station floor being placed above the track level, rather than below it, because it simplified the problem of arrangement, and afforded far greater opportunities for attractive architectural treatment. Expressed in its simplest terms, the plan embraces a headhouse facing the city to the east of the tracks, and housing a great main concourse, from the rear of which access is had to a second hall built out over the tracks, which serves the dual function of a waiting room and a train concourse.

Station Faces the City

As will be apparent from the map, the station is bounded on the north, west and south by a great ex-



How the Railroads Reach the New Terminal, and the Location of the Old Stations



An Aerial View of the New Terminal

(1) The Passenger Station, (2) The Plaza Approach, (3) Mail Terminal, (4) New Postoffice (under construction), (5) Express Terminal, (6) Coach Yard, (7) Engine Terminal, (8) Western Hills Viaduct, (9) Chesapeake & Ohio of Indiana Connections, (10) New Southern Yard, (11) New C. & O. of Indiana Yard, (12) Baltimore & Ohio Main Line, (14) Gest Street Underpass, (15) Bald Knob (source of filling material).

panse of railway yard tracks that are not crossed by street viaducts within a distance of 1,000 ft. Thus, the situation is such that the station is seen primarily from the direction of approach by the outgoing passenger, namely from the east, and the design adopted serves to emphasize in architectural treatment what the east elevation signifies, a city gateway at the end of a spacious parkway sloping gently upward to the west. To accomplish this effect the primary element of the east facade is a massive masonry arch enclosing a great half circle of windows set off in the vertical divisions by wide mullions. This central mass is given the necessary support and emphasis by heavy flanking pilasters which are flanked, in turn, by low curved arcades that take a quarter turn to the east from the two sides of the building.

Convenient Approaches to Station

These simple architectural features of the front elevation are all equally essential elements of the station plan. Thus, the great arched front forms the east wall of the main concourse which is semi-circular in plan with a great half-dome ceiling. The two curved arcades, on the other hand, comprise the outer ends of a three-lane traffic way for taxicabs, buses and street cars, respectively, and provides a remarkably convenient means of entrance to and exit from the passenger terminal. From the outer ends of the arcades, the roadways descend on grades sufficient to permit them to be continued under the concourse floor. Thus, the street vehicles, entering on the north side pass under the station and leave via the south arcade. Separating the three lanes are footwalks, which, near the outer ends of the arcades are at a level convenient for unloading or loading passengers, but which for the remaining length are on ascending grades that join the station floor level just outside vestibuled north and south doorways to the main concourse. Passengers who come to or leave the station on foot or in private automobiles enter or leave the concourse through vestibuled doorways in the east front, which opens on a broad platform protected by a marquise.

Two Large Concourses

The main concourse is approximately 176 ft. wide by some 125 ft. deep with a maximum ceiling height of 106 ft., the semi-circular floor area being entirely unobstructed save for an information kiosk. The north side of the curved west wall is occupied by a row of 18 ticket windows, while the corresponding south portion accommodates a soda fountain, a telegraph counter and a drug store, and the entrance to the lunch and dining rooms. Along the front wall, in addition to a width of 45 ft. at the center devoted to an entrance vestibule 22 ft. deep, there are four shops and a travel bureau, while in the two corners, to the east of the north and south vestibules are a tea room and a small moving picture theater, respectively.

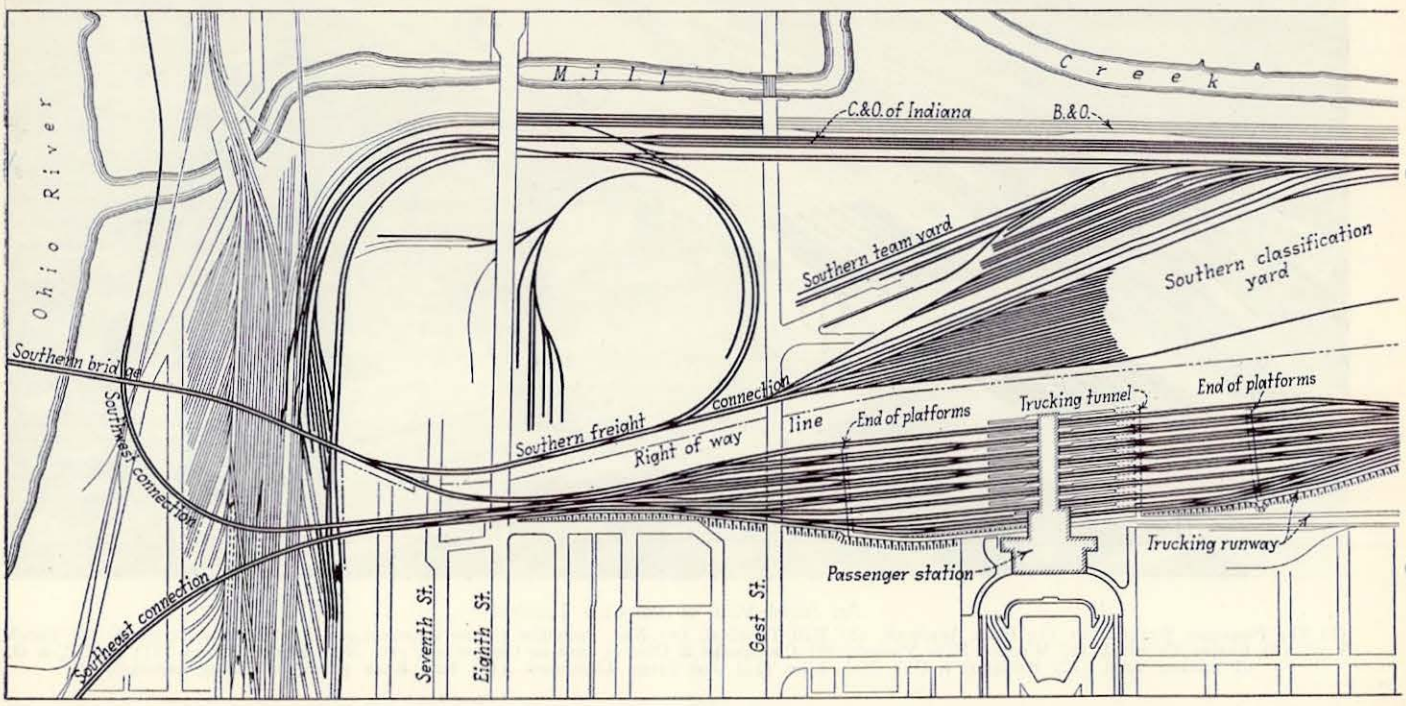
Off the center of the west wall a spacious passage, which leads to the train concourse, serves the function indicated by its designation as the "checking lobby," since it is bordered on the south by a parcel checking counter and on the north by the baggage checking counter. In addition, it opens on the north to the news room, boot black and barber shop and on the south to the women's room, telephone service and travelers' aid.

The end of the checking lobby opens into the train concourse, a room 410 ft. long by 78 ft. 8 in. wide with a segmental arch ceiling 36 ft. 8½ in. above the floor at the crown, and with eight doors in both the north and south walls that afford access to both stairways and ramps to the station platform.

The architectural treatment of the station exterior is modern yet conservative. The east front is faced

with a light colored fine-grained Indiana limestone over a low granite base, except for the use of Cold Spring dark rainbow granite under the marquise. There is a marked absence of ornamentation, which is limited to figures carved in relief on the two broad pilasters and to a clock with a 16-ft. face just below the crown of the arch. The large hands are aluminum and are illuminated at night by bars of Neon lights. Aluminum is employed exclusively for exterior window frames, sash and doors, and for the marquise, which is of polished aluminum and glass. However, the impressiveness of the facade is intensified in no small measure by the setting given it at the head of the approach plaza, which has broad driveways separated by hedge-bordered lawns, while directly in front of the central mass of the building are a fountain and cascade flanked by two groups of four slender pylons that support concealed flood lights.

The side and rear walls are faced with light-colored brick, while the dome is covered with terra cotta in a diamond rib pattern of the same tone as the facade. The entrance arcades are lined with cream-colored terra cotta.



Interior Treatment

The station interior is characterized by simplicity of form and detail contrasted with a richness and warmth of color, that is intensified by an abundance of natural light by day and an extraordinary artificial lighting at night. The use of color extends even to the terrazzo floors which are divided by brass strips into bands and panels in various shades of gray and rose.

The walls and ceilings of the two concourses are done in marble and molded plaster, the use of marble is confined to a high dado and to the sides and soffits of doorways and passages, and is applied in the form of flat panels or plain cylindrical surfaces, embellishment being effected by the novel use of aluminum strips in the joints rather than by carved beads or moldings. Aluminum is also used almost exclusively for all interior metal work in the public spaces, including ticket grilles, doors, signs, concession show windows and special lighting fixtures.

The most outstanding effects have been obtained in the two concourses, the lower wall treatment of both comprising the use of red Verona marble over a base of Domestic Rouge antique. However, in both rooms the most impressive feature is the extensive use of large wall areas for murals done in glass mosaics in a field of colored cement plaster. In the main concourse there are two of these, the one emblematical of the history of Cincinnati and the other depicting the story of transportation. In the train concourse there are 14 murals, 12 of which are illustrative of the industries of Cincinnati and its environs. Evidence of great care is to be observed also in the treatment of the upper portions of the walls and ceilings of the two concourses. These are covered with a sound-absorbing plaster, set off in panels and bands and done in shades of yellow ranging from pale lemon to orange.

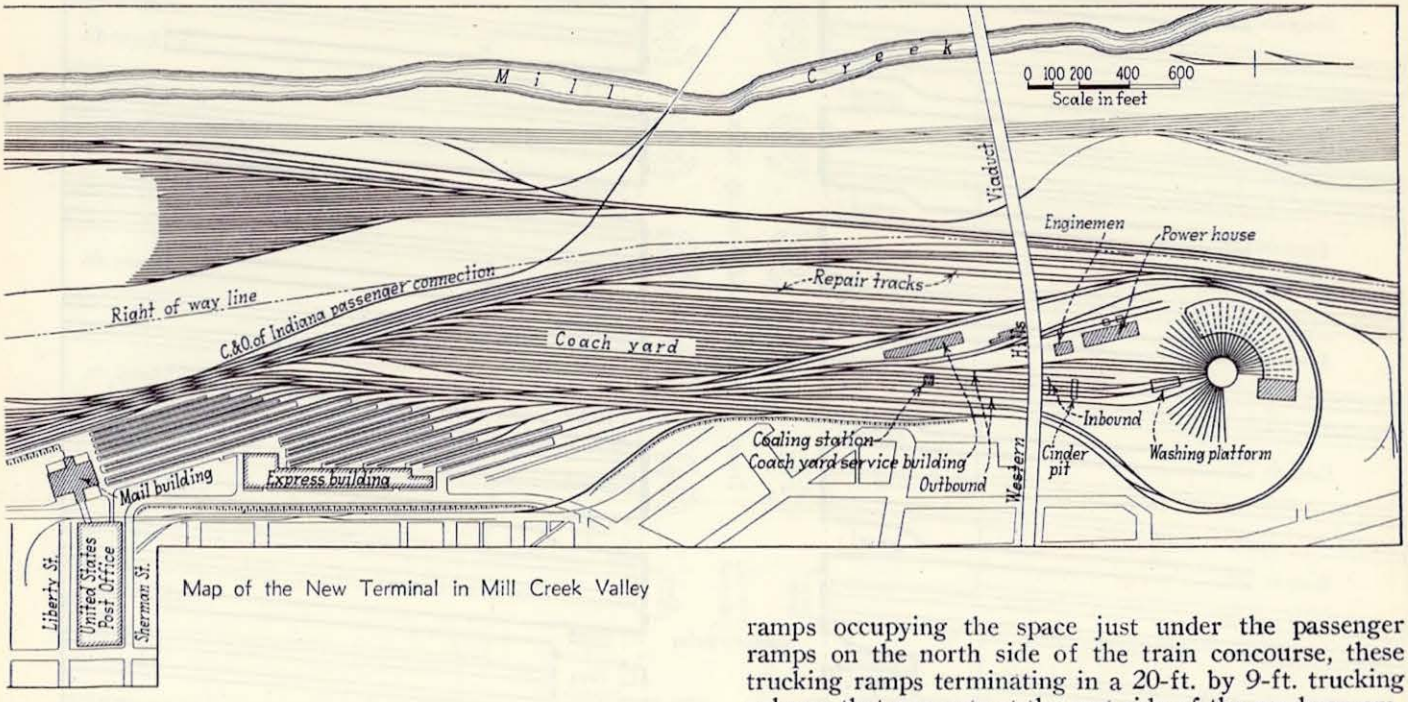
The seating accommodations of the train concourse comprise a distinct departure from usual practice, for instead of wooden benches the room is equipped with American Oak Leather seats in aluminum frames. These are arranged in 12 concentric groups of 46 seats each around a small ornamental table. Another innovation is a permanent conductors' visa counter on the longitudinal centerline of the room near the east end, in lieu of the collapsible tables commonly used for this purpose.

Remarkable Lighting Effects

As briefly stated before, much of the effect produced is due to the illumination. Thus, the main concourse is flooded with daylight through the great expanse of window area in the east front, diffused by the use of Magnalite glass. Equally effective daylighting was obtained in the train concourse by larger window areas over the train gates.

However, it is in the artificial lighting that the most astounding effects have been obtained. While the lighting in the main concourse is primarily indirect, flood lights being concealed by moldings or ledges, considerable attention was given to ornamental lighting with fixtures of distinctive but essentially plain design involving the use of Corning glass in aluminum fixtures.

A semi-indirect effect was obtained with lamps concealed behind plain aluminum-covered reflectors in the form of long slender bars placed either horizontally or vertically in front of narrow panels of Onyx Dore marble that serve as a secondary reflecting surface. The primary lighting units in the train concourse are seven ceiling panels that give direct lighting through diffusing panels of glass. Supplemental lighting is also afforded by fixtures over the tops of the train indicators.



Map of the New Terminal in Mill Creek Valley

A distinctly modern tone has been given to each of the auxiliary public spaces in the station, but with an obvious intent of according each one its own individuality. In the lunchroom, for example, which has marble walls to the level of a drop ceiling, a band of green Campani at about mid-height breaks up the continuous paneling of red Verona, while the ceiling is done in a chocolate tone in a barred pattern. The tops of the counters are Vermont Verdi antique with a dado of Verona. The stools are aluminum, with seats and backs covered with red leather.

Distinctive marbles are used also in the dining room, the men's room and the women's room, but with the walls above the wainscot in panels of plywood and flexwood, either in matched designs of natural grain or in ingenious patterns, as in the men's room where a distinctive railroad motif was employed. The chairs in these rooms are also aluminum, with leather seats and backs in appropriate colors. The toilet rooms have marble walls—light Botticino in the women's, and Cumberland cream in the men's, but toilet partitions are of Carrara glass while the doors are metal enameled in light blue. In addition to the usual pay toilets, the accommodations include stalls provided also with lavatories and a limited number of shower baths.

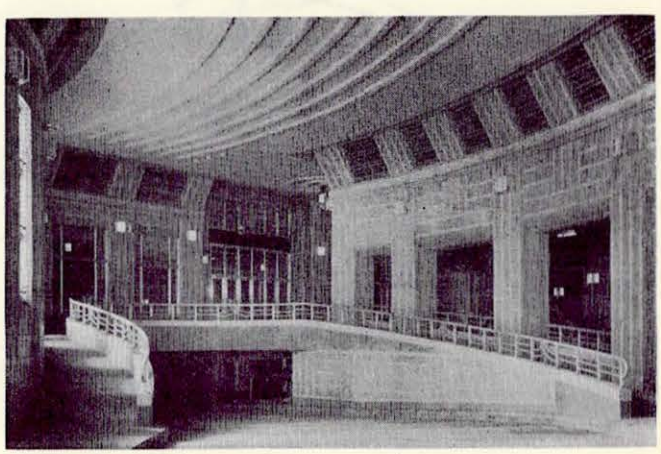
Auxiliary Facilities

The station building embraces a minimum of waste space. Dining rooms and a kitchen are housed in a wing on the south side while a corresponding wing on the north side is devoted to terminal company offices. Additional offices are provided on two floors over the checking lobby, while a two-story signal tower is located over the east end of the train concourse. The baggage room and mechanical auxiliaries occupy the ground level under the rear portion of the headhouse, while an intermediate level is occupied by toilet and locker rooms for the various groups of railway and station employees, and other miscellaneous facilities.

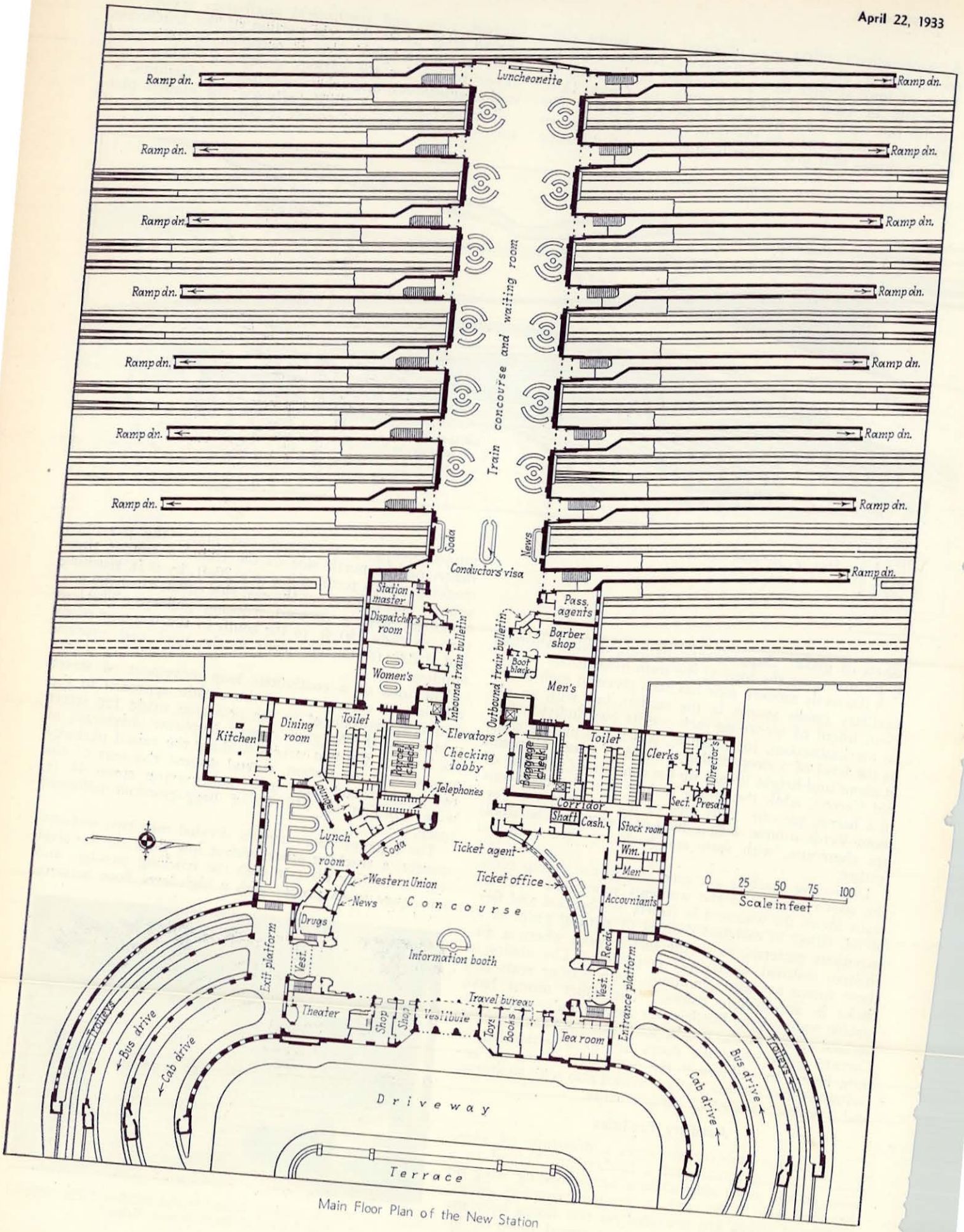
The movement of trucks between the station platforms and the baggage rooms is effected by means of ramps occupying the space just under the passenger ramps on the north side of the train concourse, these trucking ramps terminating in a 20-ft. by 9-ft. trucking subway that connects at the east side of the roadway embankment with a covered trucking gallery. This, in turn, extends 250 ft. to the south to the baggage room and 1,200 ft. to the north to the mail and express buildings.

The idea of a continuous loop movement of street vehicles, as carried out in the arcade approach to the station is reproduced in the provision made for street vehicles in the baggage room. Duplicate driveways at the level of the two streets flanking the raised parkway approach to the station, extend around the rear of the two arcades and meet in a maneuvering space 44 ft. wide fronting on 240 ft. of baggage-room tailboard space.

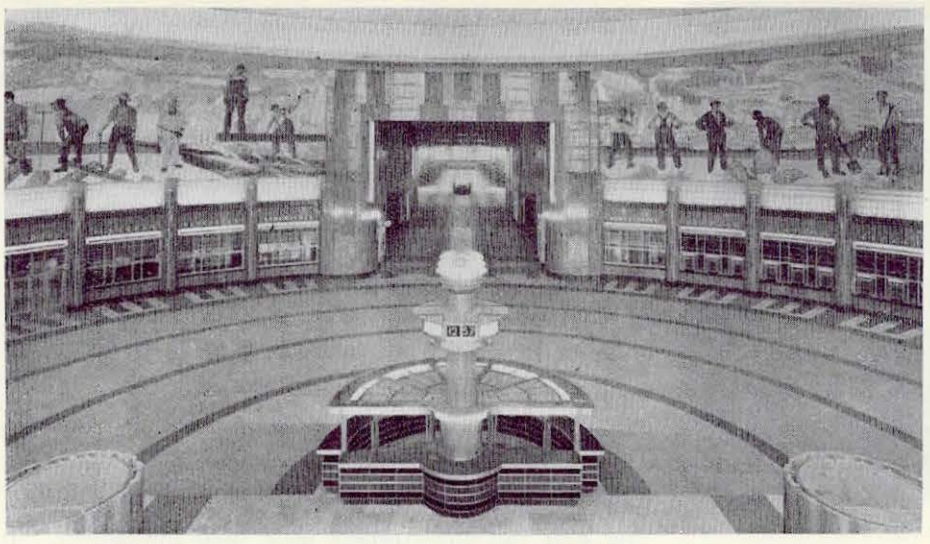
The baggage room area is divided into two sections, namely, a trucking space with a low floor on the west side connecting directly with the trucking passage, and a baggage room proper with a high-level floor between



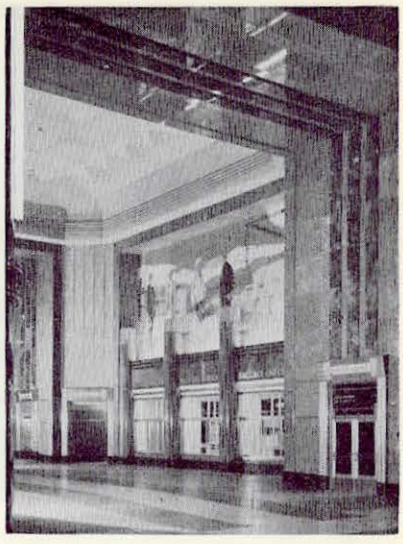
North Taxi Arcade, Looking Toward Station Entrance Lobby (Above) and Subway to South Arcade (Below)



Main Floor Plan of the New Station

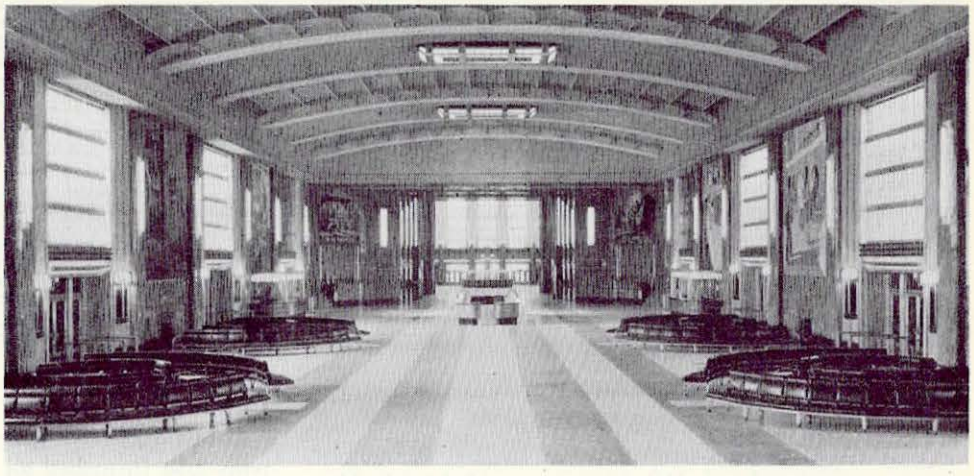


The Main Concourse, Looking West



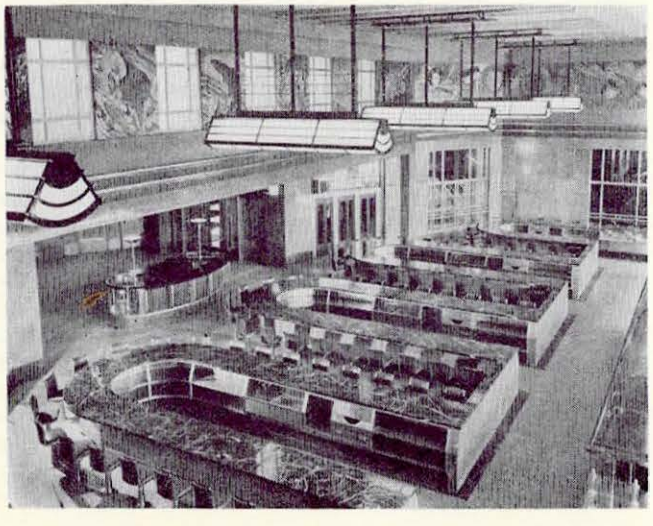
The Checking Concourse

the truck space and the street vehicle space, thus providing for the most convenient transfer of baggage from street vehicles on one side to platform trucks on the other, or vice versa. The high-level section is equipped with Fairbanks scales.

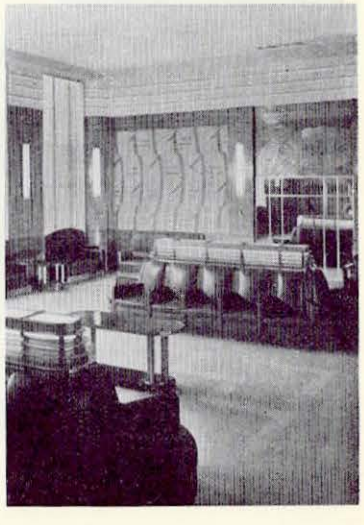


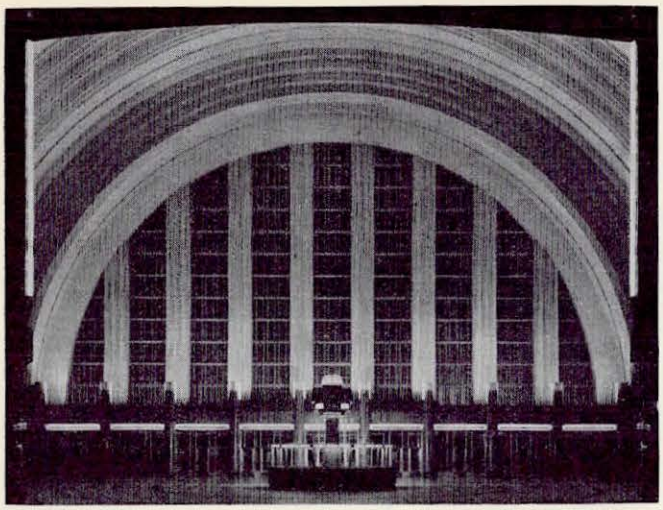
Train Concourse Looking East Toward the Main Concourse

The station track layout, which now embraces 7 platforms, and 14 platform tracks and a run-around track, with ample room for expansion, embodies an interesting variation in the width of platforms that permitted of the introduction of parking tracks between those that serve the platforms. To give ample room between the sides of the ramp structures and the edges of the platforms for one standing and one moving truck, it was necessary to make the platform 28 ft. wide, a width that was greatly in excess of the requirements elsewhere. Therefore, by narrowing the outer ends of the



On the Left, the Lunch Room—On the Right, a Corner of the Women's Room





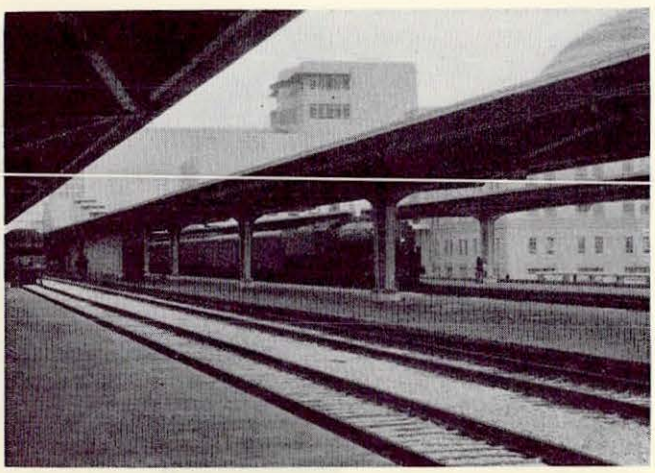
A Night View of Great Main Concourse, Looking Toward the East Front

platforms to 15 ft. it was possible to introduce short inner tracks at each end. Each of these tracks connects into the throat, and at its inner end and at an intermediate point it is connected with the through tracks on each side. This arrangement is especially attractive in connection with the operation of this station because of the large number of through sleepers that are interchanged, since it permits these sleepers to be set out, parked, and switched into trains without fouling the throats. The platforms are 1,580 ft. long, but can be extended to a maximum length of about 2,400 ft.

The platforms, which are of concrete, are covered with canopies that are unusual in the spacing of columns (80 ft.) and in the structural framing predicated on this wide spacing. The roof consists of Truscon I-plates covered with Carey built-up roofing. The wide spacing of columns, together with the use of aluminum paint on the steel has resulted in an unusually attractive appearance.

Water-Service and Air Lines

Water-service lines carried under the tracks and platforms at intervals of 160 ft. are provided with Murdock hydrant boxes in the intertrack spaces between platforms, while air lines crossing the station yard at about the middle points of the north and south extensions are provided with service connections in the Murdock boxes. Pyle National outlets for battery charging circuits and Vapor Car Heating flexible steam connectors have also been installed.

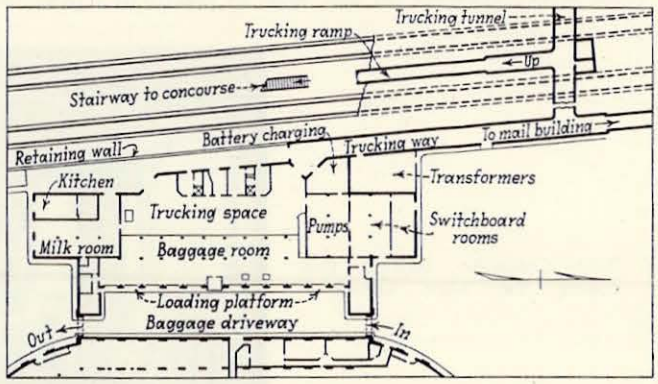


The Platform Canopies Are Constructed With a Span of 80 ft. Between Columns

The layout of trackage for the coach and engine facilities and for the mail and express terminals is such as to afford a maximum choice of operating methods. This applies in particular to the movement of cars from the station to the coach yard or to the express and mail tracks, from the coach yard to the station or the express tracks, etc., as well as to the turning of trains on the two-track loop around the roundhouse.

High Standard of Construction

All heavy-traffic tracks are laid with 130-lb. R. E. rail, while other tracks are provided with 105-lb. relayer rail, all turnouts are No. 10, except those in the coach yard, and the mail and express yard, which are No. 9. All frogs are of the manganese insert type and the turnout guard rails are solid manganese, Racor design. Maney curve guard rails are installed on the loop tracks and at other locations of sharp curvature, and Fair rail anti-creepers were used throughout. In all, there are 45 miles of track, 43 double-slip switches, 5 diamond crossings, and 262 turnouts in the layout. Hand-thrown switches, of which there are 134, are equipped with No. 30 Titan stands, manufactured by

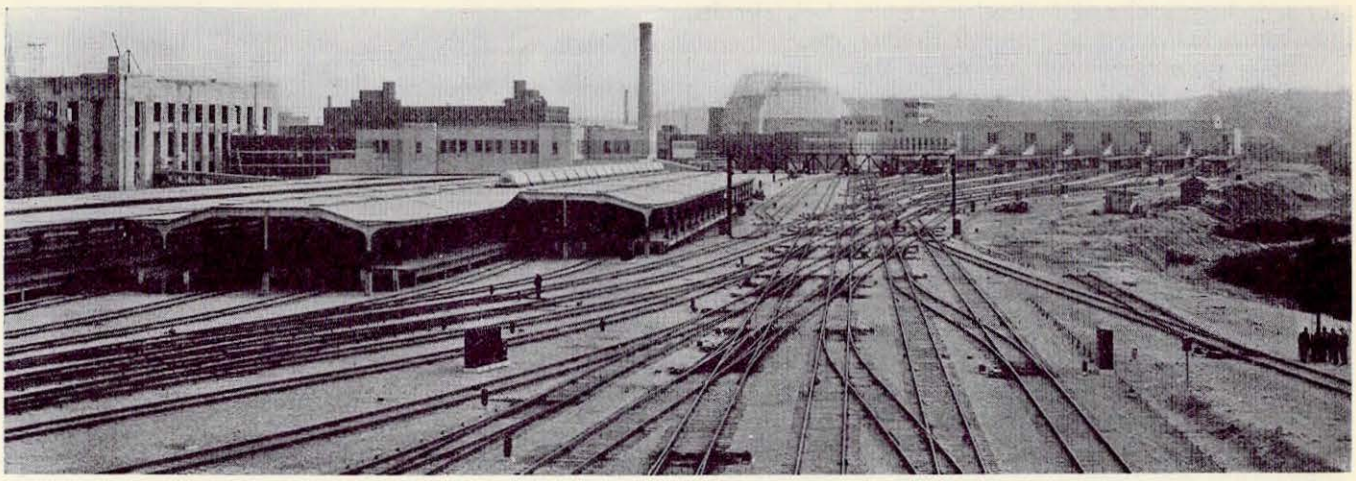


Baggage-Level Floor Plan Showing Trucking Route to Platforms

the Weir-Kilby Corporation, Cincinnati, which company also furnished all of the turnouts and other special trackwork. Rail joints were supplied by the Rail Joint Company, New York.

Interlocking Facilities

An outstanding feature of the terminal is the interlocking facilities whereby the switches and signals throughout the station tracks, as well as in both the north and south throats, are all controlled from one interlocking machine, located in an operating room on the roof of the train concourse, windows being arranged to permit a view of the entire terminal area for more than a mile to both the north and the south. The interlocking is the Union Switch & Signal Company's electro-pneumatic type, with an interlocking machine with 187 working levers in a frame for 231 levers, the largest of this type in service. Lever lights are installed below the respective levers to give information relative to the operation of the interlocking. In the illuminated track model, located over the machine, an unusual feature is the mounting of letters two inches high on lines representing the tracks of main routes, so that when the train director calls a route to be set up, for example, from "SI to RK," the leverman can most



Looking South, Over the North Throat, the Mail Terminal on the Left, the Station in the Background

readily manipulate the levers necessary to set up the route, thus simplifying the operation.

The operating room was given special treatment to reduce the interference from noise. The floor is covered with heavy cork linoleum, while the ceiling and the upper three feet of the walls are covered with Celotex.

The signal and interlocking equipment embraces 4 derails, 70 single switches, 37 double slip switches, 116 dwarf signals, 22 bridge signals and 11 ground high signals.

Switch Machines

The switch machines used in this interlocking are the latest Union Type-A-5 with Type-CP valves. This is the first large installation of this movement, the outstanding feature being that the point-detector mechanism includes means whereby the action of the controller de-energizes a relay when the points are trailed through. The electro-pneumatic control valve is also of the latest design, and incorporates a contact on the poppet valve, which is included in a circuit that checks not only the position of the switch movement but also the intermediate controlling device, this permitting the restoring of a switch lever to the starting position in the event that the switch points are obstructed in their operation. Another advantage of the new valve is the saving in the amount of compressed air required, as well as the use of lower pressure. A novel feature of the slip-switch layouts is that separate switch movements are provided for the movable point frogs and for the points, instead of operating both with one cylinder by pipe connections.

The signals are of the color-light type, a special feature being that the signaling is arranged for four indications, which gives a maximum facility for train operation. Dwarf signals, which permitted a close track spacing were provided in the station area, the use of high signals being confined to points where longer range indications are required.

Aspects and Indications of High Signals

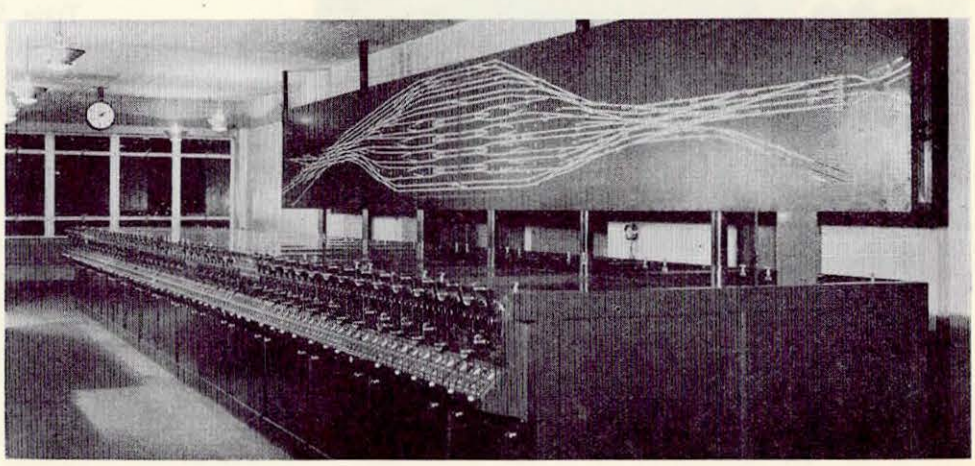
Color	Indication	A.R.A. Code Rule
Red over Red	Stop	292
Red over Yellow	Restricting	290
Yellow over Red	Approach	285
Green over Red	Clear	281

Aspects and Indications of Dwarf Signals

Color	Indication	A.R.A. Code Rule
Red	Stop	292
Yellow	Restrictive	290
Yellow over Red	Approach Slow	288
Green	Clear Slow	287

Electrical Power Supply

The method of supplying electrical power for this interlocking differs from ordinary practice in that the operation of all circuits depends on alternating current supplies, no batteries of any sort being used within the home signal limits, but Exide storage batteries on floating charge are used for the track and control circuits on the various tracks approaching the outer home signals. Within the interlocking limits, alternating current is used for the track circuits, signal lights, indication lights on the interlocking machine, and track model board. Direct current at 12 volts, fed from a rectifier is used



The Illuminated Track Diagram Is Mounted Over the Interlocking Machine

for switch control and indication circuits, lock circuits, and signal indication and control circuits, etc.

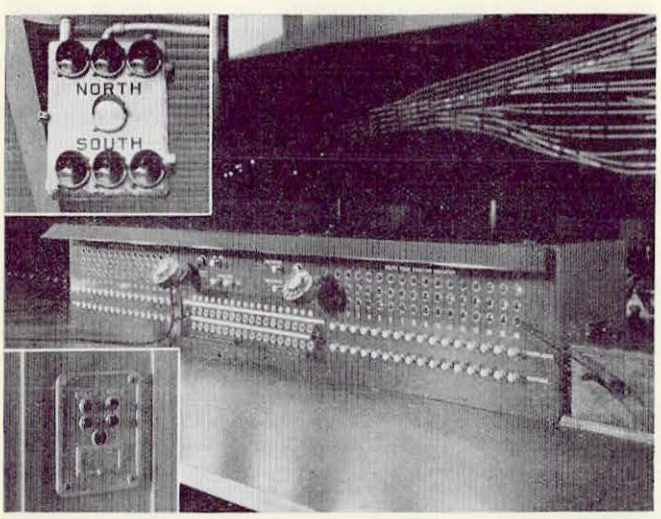
The a-c. power for the feeding of track circuits and signals is distributed over the plants from the terminal company's substation by a 2,300-volt single-phase circuit. At each of the 18 feed points, a set of hand-throw General Electric oil switches is so connected that the feed can be cut through or terminated at that point, and so that the local transformer can be fed from either direction. At each of these locations there is a 1.5-kv.a. G. E. 2,300 110-volt air-cooled transformer. At the various signal instrument cases as required, Union W-10 transformers are used to feed track circuits.

Duplicate 25-kv.a. transformers, 2,300 - 115 volt, provide a-c. energy required in the tower, and also feed the Union Type-RPQ-20 constant-potential rectifier which supplies the 12-volt d-c. circuits. A duplicate transformer and rectifier are provided for standby service and can be switched in manually.

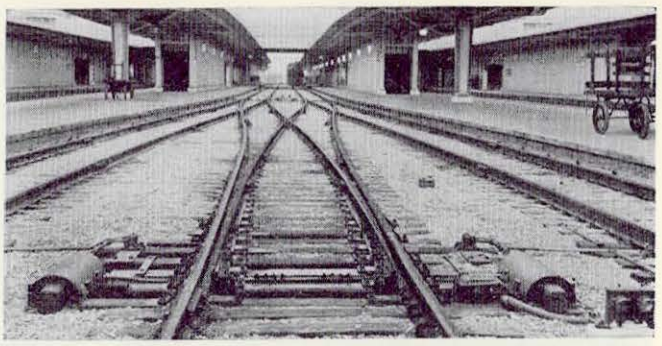
The compressed air for the operation of the electro-pneumatic switch machines is furnished from the air compressors in the power house. The main air line, a two-inch pipe, is extended as a loop down each side of the track layout, being supported every 10 ft. on a small concrete foundation.

Special Wiring Problem

With the interlocking machine on the fifth floor of the station building, the wiring distribution involved serious problems. Lead-covered cables extend from the relay room on the fourth floor down through a vertical shaft 18 in. by 7 ft. for 90 ft. to a large manhole on the ground level, from which point lead cables extend through a duct system of fiber conduit in concrete, out to cable houses, there being one such house at each end of the station platform. A total of 2,000,000 conductor feet was involved in these lead cables, which were made up according to Signal Section, A.R.A. specification No. 9120. From the houses 37-conductor parkway cables extend to the various relay cases, from which smaller parkway cable is used for the runs to junction boxes, signals, switches, etc. Parkway cable was used beyond the station platform area because it was not considered feasible to construct a concrete duct line on the new fill. All parkway cable is buried at least 30 in. below the surface. After being covered with a layer of loam, a plank of Elastite, about 1 in. thick was laid over the cable so as to afford mechanical protection against picks,



The Train Starting System Includes a Cabinet on the Train Director's Desk, The Signal, (upper left) and Button and Light at Each Gate (lower left)



The Switches Leading to the Inner Sidings Are Normally "Cocked"

shovels, etc. All cables, both lead covered and parkway, were furnished by the Hazard division of the Okonite Company.

The relay room is on the fourth floor, directly below the interlocking machine, and houses about 1,000 relays and auxiliary apparatus. At the east side of the room there is a large terminal board at each end where the incoming cables terminate. The relays are of the shelf type. The tower wiring is all single-conductor No. 16 solid with 3/64-in. insulation, a total of 297,000 ft. of this wire, all furnished by Kerite, being required for the tower wiring.

Unusual Switching Arrangement

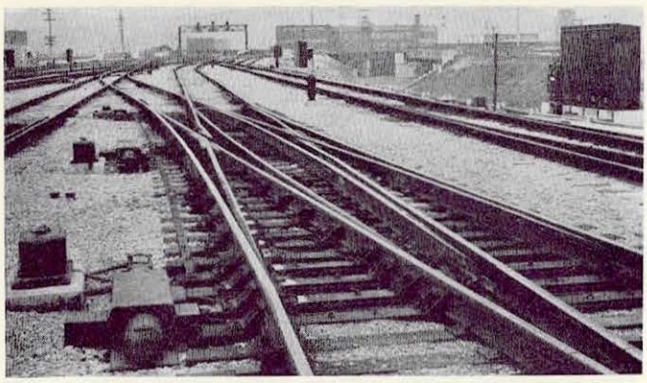
As explained in the description of the track layout, short tracks are provided between the platform tracks for the interchange of sleeping cars and express cars to obviate the necessity of switching back over the main throats and thus interfere with main-line movements. As these switching movements are to be handled by trainmen and yardmen familiar with the moves to be made, it was decided that such operations would be carried out satisfactorily by using hand-throw switches on the crossovers to these inner sidings, rather than connecting them with the interlocking machine.

Two-lever switch stands are provided at the platform track switches. One lever, which is so arranged that it must be thrown first, is pipe-connected to the inner-track switch, while the other lever is used for throwing the platform-track switch. The switch stand is equipped with an electric lock and can be opened only by the use of a release button in the tower, thereby requiring the switchmen to call the towerman before the switch can be opened. As a further safeguard, the switch in the inner track is so arranged that it is in a "cocked" position when the platform switches are closed for main-line movements, thus serving as an effective derail.

Train Starting System

A complete train starting system, also furnished by the Union Switch & Signal Company, was installed as a part of the signaling installation. The train starting signals are suspended from the train sheds about midway of the platform and are two-faced so as to display indications in both directions. The horizontal row of lights at the top of the signal govern northward train movements and the bottom row southward movements the two rows being separated by a lunar white light.

On the train director's table, which is in the tower approximately 15 ft. in front of the interlocking machine, is located the train starting control cabinet. In addition to directing the movement of trains, the train director supervises the departure of all trains. About two minutes before a train is due to depart, the con-



One of the Double-Slip Switches Equipped With Electro-Pneumatic Machines

ductor presses one or the other of two buttons on train shed columns near the two ends of the platform, which registers a red light in the train-starting signals on the platform, in the tower and at the train gate in the concourse. The train director acknowledges the conductor's signal by pressing an acknowledgment button which registers yellow lights in the tower and on the platform, putting out the red light in the tower. When the train is due to leave and at the closing of the gate, the gateman presses a button, registering green lights at the gate in the tower and in the signal on the platform, putting out red and yellow lights in the signal, the red light at the gate and the yellow light in the tower. After the train has departed, the train director presses the restore button, putting out all lights.

Auxiliary Facilities of the Terminal

The mail and express facilities are located north of the station along the east side of the terminal property, where convenient access is had to city streets. Other considerations affecting the choice of the site were the desirability of co-ordinating the arrangement of the two facilities, and the plans of the U. S. Postoffice department for a large terminal postoffice which is now being completed between Sherman and Liberty streets, just east of the terminal company's property. The railway mail building lies just west of this postoffice and the express building is located farther to the north, but the two are served by a single group of tracks and platforms so arranged that the tracks and platforms in the middle can be used for either class of service.

Cincinnati is a regional distribution point for parcel post, handling an average of about 70 carloads of storage mail per day. Consequently the terminal project gave rise to plans for improved facilities for the receipt, separation and forwarding of mail. Mail received is divided into three classifications: City mail, terminal mail (pouches to be opened for the separation of the contents), and transfer mail (pouches received and forwarded without opening). The first two are worked by the postoffice, while transfer mail is handled exclusively by the station company forces. From the standpoint of operation also, all mail received and forwarded at Cincinnati is naturally divided between that received from or delivered to roads south of the Ohio River and that handled by the roads north of the river. This separation is readily effected by the assigning of platforms and tracks to each group. An arrangement was made with the postal authorities under which the postal delivers city mail to the postoffice separate from the transfer mail, in consideration of which the postoffice delivers outgoing mail segregated as between southern and northern railways.

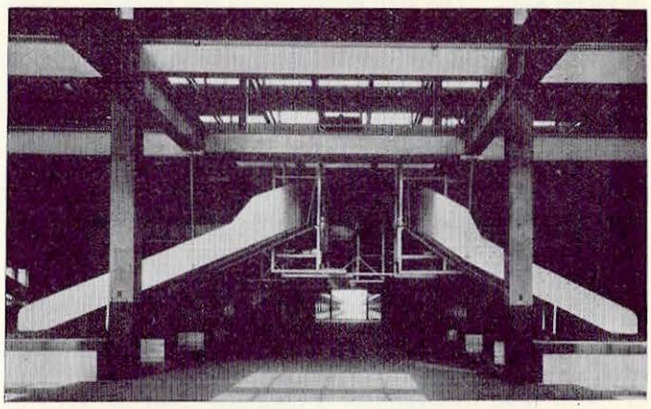
Inbound Mail Handled on Conveyors

Belt conveyors are the basis for the inbound movement and separation of mail in the terminal operations, the key to the plan being the separation of the terminal mail from the transfer mail and the city mail at two conveyor platforms, one serving two tracks assigned to cars for southern roads and another for cars from northern roads, on two other tracks. Each platform has two conveyors, side by side, with an arrangement of checkered plate covers and slide plates so arranged as to facilitate the separation direct from the car doors. One of these belts carries the terminal mail through the mail building direct to the postoffice. The other two belts deliver the city and transfer mail to a primary classification station in the top of the mail building, where it slides down steel aprons onto a working platform. There are two of these aprons—one for the belt from the southern-road platform and the other for the belt from the northern-road platform. Two conveyors from the postoffice deliver outgoing mail similarly separated. From the platform the mail pouches are dropped through hatches that provide six primary separations—one for city mail, to a belt that carries it into the postoffice, another for terminal mail received on the platform in error which must be delivered to the postoffice on the belts provided for this purpose, and the other four to chutes that deliver it to four platforms on the main floor of the building—each of which provides tailboard space for 24 trucks, thus permitting of 96 secondary separations of the outgoing mail.

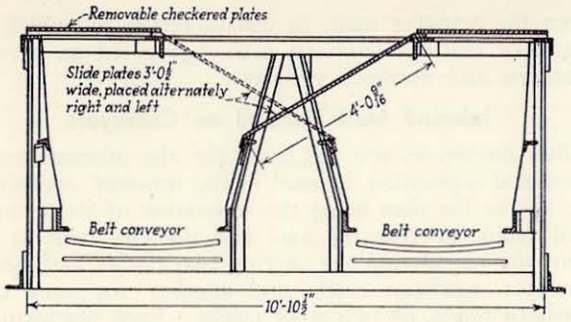
The mail building, 172 ft. 7 in. by 177 ft. 10 in. is essentially an enclosure for the equipment described above. It has a structural steel frame and reinforced concrete first floor and roof, the latter being flat except for saw-tooth monitors directly over the elevated mail-handling platform.

The Express Building

For a length of 601 ft., the express building is 40 ft. wide while for the remaining length of 141 ft. at the south end it has a depth of 136 ft. There is a loading platform 5 ft. wide along the entire east or street front, while on the west side there is a trucking space 30 ft. wide that connects with the island platform between the tracks and, like the platforms, is covered with a canopy. Except for those portions of the building that are occupied by offices, stair wells, toilets, value rooms, cold rooms, etc., the building frontage on platforms and trucking spaces is enclosed by Kinnear rolling doors, occupy-



Chute Arrangement in the Mail Building



Cross-Section of the Conveyor Platforms at the Mail Terminal

ing the entire width between columns, which in most cases are 20 ft. center to center. The building is two stories high with a basement under one portion, and has a steel frame, reinforced concrete floors and roof, and brick walls. The second floor is used for offices and storage. There are two elevators with 5-ft. 8-in. by 8-ft. 5-in. platforms at the south end and one with an 18-ft. 10-in. by 7-ft. platform near the north end.

The four tracks used for inbound mail, i.e., those served by the two conveyor platforms, together with the three trucking platforms that serve these tracks, are covered with a solid roof shed with smoke slots over the tracks. The shed has a steel frame and a Truscon precast concrete tile roof. The other platforms serving the mail and express tracks are covered by individual flat roof canopies, also with steel frames, but roofed with Holorib sheets which are used also for the roof of the trucking gallery between the station baggage room and the mail building. All of the trucking platforms are of concrete.

Locomotive and Coach Facilities

The engine terminal embraces a 20-stall roundhouse, a washing platform, cinder pit, three fire-lighting stations and a coaling station served by two outbound and four inbound tracks. The enginehouse stalls are supplemented by 17 outside radial tracks, of which three are connected with one of the outbound leads to serve as ready tracks.

The inner circle of the roundhouse is located 153 ft. 7 in. from the center of the 115-ft. twin-span turntable and the stalls are 129 ft. deep. The building has a steel frame arranged in three bays, namely, front and rear bays of 29½ ft. and a center bay of 70 ft. spanned by trusses that support a roof that is elevated to form a monitor above the roofs of the front and rear bays. The roof is of three inch wood sheathing protected by Carey composition roofing. The walls are of brick faced with glazed tile on the inside, but large areas even in the one exposed end wall are enclosed with windows in metal sash. The stall doors are of the Fenestra Byrne type. A one-story wing 145 ft. by 77 ft. has been provided at the east end of the roundhouse to serve as a machine shop, storeroom and master mechanic's office.

Special Illuminating Fixtures

The enginehouse is distinctive by reason of the attention given to illumination. The primary illumination is provided by eight 500-watt lamps in special chromium-plated, vapor-proof roundhouse reflectors and mounted in pairs under the bottom chord of the roof trusses. These fixtures are inclined at an angle that directs the light on the running gear of the locomotives, and with the special Pyrex heat-resisting diffusion lenses with which they are equipped, an average light intensity of about nine foot-candles is obtained from the floor to the top of the drive wheels. Subdivision into separate circuits with individual switches affords ample opportunity to provide lighting only where and when needed. Supplementary lighting is provided by ceiling lights along the outer and inner aisles, and while the system of illumination provided reduces the need for extension cord lights, plug receptacles for extension cords are provided on alternate columns. Special circuits with suitably placed outlets are provided also for electric welding and for the charging of the batteries of portable cranes.

A Direct Steaming Installation

All 20 of the stalls in the house and 10 of the outside radial tracks are equipped for refilling and for resteaming locomotive boilers by the Direct Steaming system. The remaining seven outside radial track stations are equipped for maintaining a working steam pressure on the locomotives without fires.

A high pressure steam and a blow-off main are required to serve each of these stations. In addition, a hot filling water main is required to serve each of the 27 steaming stations equipped for refilling locomotives, and a hot washing water line is provided to serve 10 washing-water drop connections in the enginehouse.

Each steaming station is equipped with two inch flexible connections each provided with four Barco joints of the bolted-on gland type, recently adopted as a standard for all Direct Steaming installations. Connections to the locomotive blow-off cock are established by means of special forged steel, square thread unions manufactured for this purpose by the Huron Company. In addition to the Direct Steaming stations there are 10 two-inch flexible drop pipes for washing water hose connections between alternate stalls in the enginehouse, with overhead operating valves of the Gato type.

The three fire-lighting stations for igniting locomotive fires as the locomotives are moved from the steaming stations to the "ready" track, are of the ground-pit type. The complete elimination of fires from locomotives in the roundhouse made it practicable to employ steel construction in the enginehouse and to dispense with a heating system. Five stalls are equipped with Dickinson smoke jacks while the other 15 have roof ventilators of the same make, so that there is no appreciable heat loss from this source.

This Direct Steaming system was designed and licensed by Railway Engineering Equipment Company, Chicago, which also constructed the fire-lighting stations and furnished all of the piping for its system, including the hot-water filling and washing facilites, and the installation of a D. & M. locomotive cleaning machine to serve two inbound locomotive tracks equipped for the use of four nozzles simultaneously, for which purpose a concrete washing platform with drains underneath these tracks was provided.

Three Poage water columns provide water service to all six enginehouse lead tracks, and a 300,000-gal. elevated steel water tank provides storage for the terminal supply, while two 15,000-gal. tanks were provided for the storage of cleaning oil and fire-lighting oil.

Coaling Station and Cinder Plant

The coaling station, which was designed and constructed by the Ogle Construction Company, Chicago, is of reinforced concrete and has a storage capacity of 700 tons of coal, 100 tons of wet sand and 25 tons of dry sand. The coal storage space is divided to provide separate bins for 600 tons of high-volatile coal and 100 tons of low-volatile coal, the object being to supply all outgoing locomotives with a sufficient amount of low-volatile coal for use while in the city limits to reduce the smoke nuisance.

Both grades of coal and the wet sand are delivered from the cars to a depressed, reinforced concrete receiving hopper 25 ft. long by 17 ft. wide, from which they are elevated at the rate of 80 tons per hour by an Ogle automatic, electrically-controlled, skip-hoist. A gate at the top of the hoist, controlled from a push button at the ground level, provides for discharge into the proper bin.

The high volatile coal is delivered to locomotives on four inbound tracks through two steel weigh hoppers of 10 tons capacity, while low volatile coal is delivered to locomotives on all six tracks through a motor-driven weigh larry of 5 tons capacity. The weigh larry was introduced to meet the problem of delivery of coal to six tracks from a storage structure that stands over only two tracks. It is supported on a structural steel runway that extends crosswise just under the storage space and is cantilevered out on each side far enough to reach over the outer tracks on each side. The weigh hoppers and larry are each provided with two Ogle overcut-gate coal-delivery fixtures. Wet sand is discharged directly from the skip buckets to the elevated wet-sand storage bin, from which it flows by gravity to the sand driers, and thence by gravity to the dry-sand bin, from which it is delivered by gravity through Ogle sand-delivery fixtures to locomotives on the four inbound tracks.

Ashes from locomotives on the four inbound tracks are handled by an Ogle standard four-track, electrically-operated ash-handling plant, which is provided with four ash hoppers of 80 cu. ft. capacity (one for each track) and one Ogle self-dumping ash bucket, also of 80 cu. ft. capacity.

An engineman's building 65 ft. 2 in. by 44 ft. 2 in. houses a locker room, toilet and washroom and an office on the first floor and offices on the second floor. There is also an engine-supply building, 57 ft. 4 in. by 15 ft. 10 in., one story high.

The Coach Yard

The coach yard contains 26 tracks, spaced alternately 14 ft. and 18 ft. center to center, with concrete pavements in all intertrack spaces. The tracks average 1,300 ft. long between clearance points. Compressed air and water supply lines were installed in transverse trenches with the drainage system at longitudinal intervals of 160 ft., using 1¼-in. copper pipe with Mueller "streamline" fittings for both air and water. Outlets for both were provided in Murdock hydrant boxes in alternate intertrack spaces. Outlets for battery charging in the form of Pyle National receptacles were installed at the same spacing, while near the end of each track there is a flexible-joint steam hose connector supplied by the Vapor Car Heating Co.

On the east side of the north ladder track is a service building, 320 ft. 4 in. by 42 ft., which has a basement and is three stories high except for a short two-story section on the south end. This building provides complete facilities for the cleaning and servicing of all passenger train equipment, including storage space, work shops, offices and rest, locker, wash and toilet rooms for the different classes of employees. For a length of 42 ft. on the south end of the building, the first floor is occupied by a substation which will be described with the other electrical facilities.

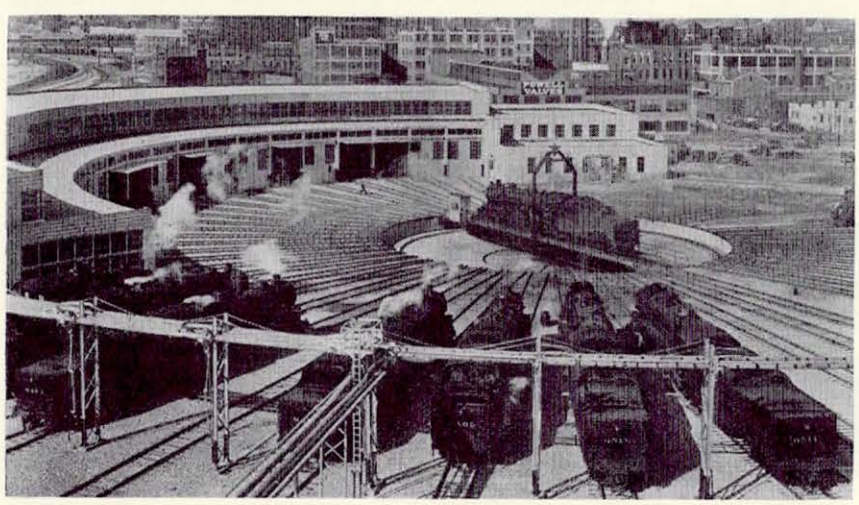
The Power Plant

The power plant is housed in a building 214 ft. 8 in. long and from 50 ft. 9 in. to 76 ft. wide, the base of the chimney, 250 ft. high by 14 ft. inside diameter, being incorporated in the design with an attractive effect, although concealed expansion joints insure a structural separation.

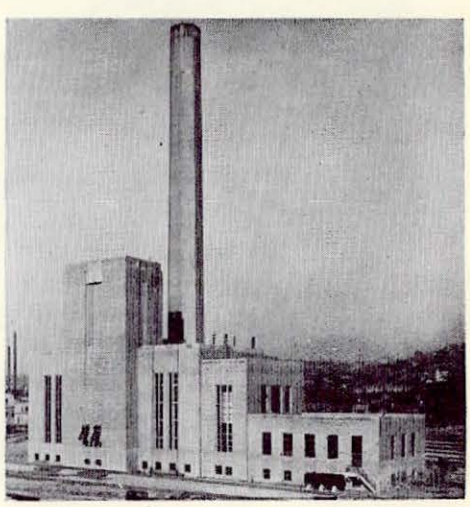
The boiler room houses three Sterling type Babcock & Wilcox boilers of 1,000-hp. capacity each, and provides space for an additional unit. The boilers have Biglow Liptac Corporation air-cooled settings, and Bailey water walls at the rear. They are fired by Westinghouse forced-draft underfeed stokers, capable of operation at 300 per cent rating. The forced draft air supply is provided by Buffalo fans driven by Westinghouse steam turbines, the fan inlet in each case being adjacent to the outlet of a second fan that exhausts air from the air-cooled boiler walls. Over-fire draft controls regulate the speed of the forced draft fans and the opening of the dampers.

Coal is received in duplicate outside track hoppers from which it is elevated to a 300-ton overhead storage bin by two independent elevating buckets. These hoists and buckets are used also in the disposal of ashes, which are dumped into the buckets from carts loaded at the ash hoppers under the boilers. These hoists are under selective push-button control which automatically establishes the proper loading, hoisting and dumping of the buckets for the two services, the ashes being dumped into an elevated storage bin. Coal is handled from the storage bin to the stoker hoppers in a traveling weigh larry.

The chief purpose of the power plant is to provide steam for heating buildings and preheating cars, and for the Direct Steaming system which is operated in



The Roundhouse, Outside Radial Tracks Equipped for Direct Steaming in the Foreground



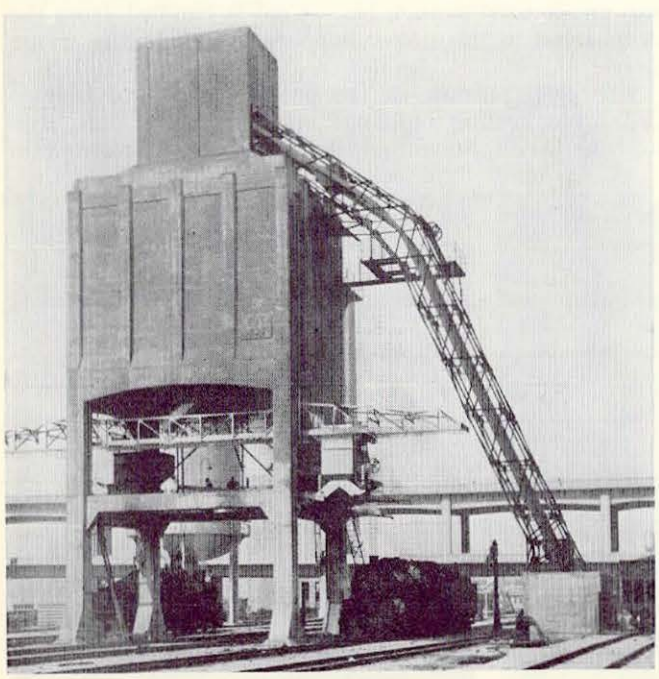
This Plant Furnishes Steam for All Purposes

connection with a boiler blow off, washout and refilling system and for generating compressed air for the electro-pneumatic signal system and for other uses. The boiler plant operation is definitely co-ordinated with the latter operations in that the exhaust steam from the auxiliaries of the plant is taken into the condensers with the steam from blowing down locomotives, and the water thus heated is used for both boiler feed and refilling locomotives.

Exhaust steam from the air compressors, the pump and fan turbines and the discharge from the locomotive boiler blow off is received in a flash tank in the pump room from which the water is discharged into a 12,000 gal. settling tank in the basement, to permit its reuse for washing boilers. The steam from the flash tank is piped to two jet-type condensers into which water is delivered by pumps that are under an automatic control, which insures that the water received will be in correct volume to give a resulting temperature of 212 deg. F. The hot water is discharged into two storage tanks of 30,000 gal. capacity for use as power-plant boiler feed and locomotive boiler refilling.

A Zeolite Water Treating Plant

The water supply for both power-plant and locomotive use is obtained from the mains of the city water system, and this water, which contains from 6 to 7 grains of encrusting solids per gallon, is reduced to substantially zero hardness in a zeolite treating plant furnished by the Permutit Company, New York. This plant, which is housed in the basement of the powerhouse, comprises two units enclosed in horizontal tanks 10 ft. in diameter by 24 ft. long, that have a combined capacity of 75,000 gal. per hour or a total of 1,200,000 gal. in 16 hr. Each unit is served by an individual pump, and the discharge line is equipped with an electric signal meter which displays a red light in the office of the power plant after the unit has discharged the volume of water which it is rated to deliver between regenerations. Brine for regeneration is stored in two underground vats located outside the building, adjacent to the coal-delivery track, from which they are charged with salt in carload lots through manholes.



The Coaling Station

Other equipment in the power plant includes an Ingersoll Rand two-stage Imperial type-10 compressor with 16-in. by 20-in. and 20-in. by 20-in. cylinders and a Class PRE-2 compressor of the same make with 14-in. by 16-in. and 23-in. by 16-in. cylinders. The equipment also includes Gould centrifugal pumps for locomotive boiler refilling and washout boiler feed and for regenerating the water-treating plant.

The boilers are operated at a pressure of 225 lb. per sq. in., and during cold weather steam is carried through the distributing system at that pressure, but during the other seasons it is stepped down to a pressure of 75 to 100 lb. by a reducing valve before it enters the 10-in. main through which it leaves the power house. This main is carried underground in a concrete box to the east side of the terminal property whence it is continued as a surface line supported on a line of creosoted piles to the express building and is suspended under the roof of the trucking gallery to the station building.

Heating and Ventilating

The heating system of the station building is of interest by reason of the variation in the types of equipment employed to meet the conditions imposed, although the indirect-radiation, hot-air system formed the basis for most of the heating and ventilating, providing from 15 to 50 air changes per hour. Except for the exceptions noted below, the installations consist of American blowers driven by General Electric motors operating on 440-volt current, and forcing air through Vento heaters and into sheet metal ducts covered with asbestos. All heaters are under thermostatic control. All air taken into fans is passed through American air filters installed in sectional units to permit removal for cleaning.

In the main concourse, the heat is applied only at the points of exposure, namely, the dome, the vestibuled entrances from the plaza and the two arcades, and the enormous window area of the east face. The vestibules are heated as above described, while for the great east window area a novel recirculation system is employed. This area has a duplicate installation of frames, sash and glass in two planes separated about three feet, the air space between being divided by glass-floored galleries into seven horizontal ducts through which hot air is circulated. The attic space between the inside shell of the dome and the roof slab is heated by the recirculation of air through a battery of Arco blast heaters.

In the train concourse, two fans discharge air into the room through grilles in the ceiling lighting fixtures, while other fans in the side walls take air out through Venturafin heaters and drive it back into the concourse through grilles in the soffits of the train gate doorways. Dampers are so arranged that in mild weather the air may be exhausted out of doors.

The Pump Room

The 10-in. supply line from the power house delivers the steam to a pump room on the baggage-room floor at a pressure of 200 lb. per sq. in. in cold weather and at from 75 to 100 lb. in warmer seasons. Here it is passed through reducing valves which lower the pressure to 5 lb. per sq. in., for distribution to the various radiating units. A separate reducing valve provides steam at a pressure of 40 lb. for use in the kitchen and in hot water heaters. Nash pumps deliver the condensate through economizers which preheat the water before it enters the hot water heaters, while an additional pump forces it through the return line. Other mechanical equipment includes four Sims hot-water heaters, three hot-water circulating pumps, and a

Worthington motor-driven fire pump with a capacity of 750 gal. per min.

The refrigeration equipment embraces three ammonia compressors (Carbondale Machine Company) with rated capacities of 45, 25 and 2 tons, respectively, the small one being provided for ice cream manufacture, a Worthington air compressor, and brine and ice water circulating pumps of the same make. Brine pipes are covered with Armstrong cork.

Two Electric Substations

Electric power is purchased from the local public utility, the Union Gas & Electric Company. Continuity of service is assured by the use of two separate 13,000-volt 3-phase underground services feeding directly from two separate points in the utility company's power system. Both of these services terminate in the passenger-station substation on Westinghouse high-tension high-capacity truck-type circuit breakers which are equipped with de-ion grids. Power is taken from only one of the high-voltage services at any one time, but the control is arranged so that the other service is automatically and immediately brought into use in the event that the first source of power should fail.

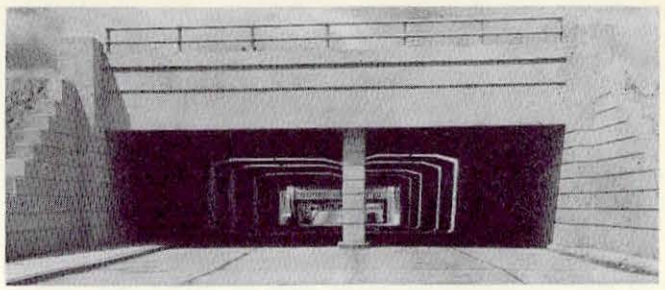
Transformers have been provided to meet the requirements of nine 230-volt 3-phase circuits for air-conditioning, twenty 460-volt 3-phase circuits for motor equipment, and fifty 230/115-volt 3-wire circuits for single-phase lighting.

The two 13,000-volt services are carried in two 3-conduction paper-insulated lead cables, from the passenger station to the service building substation at the north end of the property, where there is a substation similar to that in the passenger station. Each of the substations is equipped with two Westinghouse motor-generator sets delivering direct current for charging batteries both for car lighting and for the Elwell Parker tractors that are employed in handling mail, baggage and express.

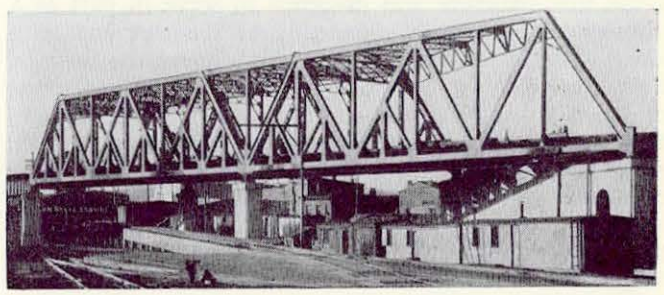
Structural Features of the Project

Structural engineering played an important part in the project and nowhere to a greater extent than in the design and erection of the steel framework for the main concourse roof, which consists in part of a barrel arch 27 ft. wide and of 209 ft. external span and in part a half dome 180 ft. wide by 128 ft. deep. Studies showed that the use of steel arches was impracticable, because the necessary height of the spring line above the foundations would have given rise to abutments or buttresses that would have destroyed valuable space in the building around the walls of the concourse. This led to the adoption of curved trusses, of which there are eight, ranging from 67 ft. 8 in. to 209 ft. in span length. The heaviest truss weighed 380 tons. But even these introduced complications because computations showed that curved trusses of the length required would be subjected to pronounced longitudinal deflections, that is, that there would be a lengthening of the distance between the ends of the trusses of as much as a foot under the application of full load.

This situation was met by the use of low unit stresses in design and by an ingenious procedure in erection. The trusses were erected with one end in the fixed position on the columns of the supporting structure while at the other end the columns were tipped in at their tops by the amount of the computed lengthening of the trusses under load, so as to give full bearing to the ends of the trusses under the "no load" condition. Then, as the falsework was struck and the roof load was applied, the consequent lengthening of the distance between the two ends of the trusses pushed the tops of the columns back into the plumb position.



Reinforced-Concrete, Rigid-Frame Structure Carrying Gest Street Under 18 Tracks



A 285-ft. Through Truss Span, on the Southeast Connection, on a Skew of 29 Deg.

Bridge Work

The bridge work involved in the project embraced both highway and railway structures, the latter forming an important part because viaduct construction was required for four of the five railway approaches to the terminal, and all of them introduced special problems. The southwest and southeast connections are characterized by the variety of structural types and span lengths employed to carry lines of sharp curvature over streets and tracks in every possible position and elevation.

Illustrative of the conditions that had to be met is one encountered on the southeast connection, requiring the construction of a 285-ft. through truss span for two tracks continuous over three supports and having a skew of about 19 deg. Notwithstanding the fact that the trusses had to be spaced 42½ ft. center to center, it was necessary to limit the floor depth to a maximum of 5½ ft., giving rise to unusually heavy floor beams in spite of sub-paneling.

Some perplexing structural problems were encountered also in the design of the viaduct that provides the passenger and freight connections for the Chesapeake & Ohio of Indiana where this line enters the Mill Creek valley from the west and has to cross over the Baltimore & Ohio tracks before descending on a grade of 1.68 per cent to the level of the terminal property. This structure contains a 146-ft. through truss span on a skew of 47 deg. and a skewed through girder span with one girder 116 ft. long and the other 129 ft. Because the line is on a curve of 10 deg., the girders had to be spread to 25 ft. to accommodate only one track. These structures have open decks with creosoted bridge ties.

In addition to a two-span structure over Seventh street, interesting underpass bridges were provided over Gest street and Eighth street, the former a two-span reinforced concrete rigid-frame structure that carries 18 tracks and provides clear openings of 24 ft. and 26 ft., respectively. The Eighth street underpass embraces three spans of 31 ft., 75 ft. and 59 ft., respectively. Because

of the limited floor depth available, resort was had in this structure to a continuous-girder design with girders only 4 ft. 2½ in. back to back of flange angles.

Western Hills Viaduct

From the standpoint of appearance, the most outstanding structure is the Western Hills viaduct, which takes the place of Harrison avenue, which crossed the terminal area at grade, and the old Harrison avenue viaduct which served as the chief route between the city and the residential areas west of Mill Creek valley. The new structure is 3,500 ft. long and from 22 to 90 ft. high, from top of footings to roadway level. Because this structure was designed to serve in part as a high-speed boulevard, connecting at the east end with Central Parkway which it joins high above the floor of the valley, a lower deck was provided for three-fourths of the length of the viaduct to provide a direct connection with Spring Grove avenue and also to segregate street car and truck traffic from the higher-speed motor-car traffic.

The structure is of reinforced concrete except for 10 panels over the terminal tracks where the required span lengths were such as to make encased steel more economical. Stiff-frame construction, with spans ranging mostly from 42 to 56 ft., center to center of bents, was used, except for two reinforced concrete arches, one of 120-ft. span over Spring Grove avenue, and the other of 109-ft. span over Mill Creek. Each roadway is 40 ft. wide, with a 6-ft. sidewalk along each side of the upper deck and a pipe gallery on each side of the lower deck, one carrying a 36-in. water main and the other a 30-in. gas main. There are two columns, 45½-ft. center to center, in each bent, and separate footing pedestals were provided for each column. Owing to the nature of the foundations, it was necessary to provide ties connecting the two abutments of each arch, these consisting of groups of 2¾-in. steel rods encased in concrete that is enclosed in a Carey waterproofing membrane.

Exceptionally unfavorable foundation conditions gave rise to the use of piling under practically all structures, and these were nearly all concrete or creosoted wood. Not only were long piles required, but the depth of penetration varied greatly often in the same foundation. Cast-in-place concrete piles, in most instances with a wooden pile on the lower end, were used under the Western Hills viaduct, except that special concrete-filled steel-pipe piles were provided under the piers of the two arch spans. Steel pipes, 20-in. in diameter, were driven to rock, the insides cleared of rock and debris by air and then filled with concrete. Creosoted wood piles were used extensively in the foundations for the railway approaches at the south end.

A total of 224,534 cu. yd. of concrete and 45,421 tons of structural steel was used in the various structures. The structural steel for the bridges was fabricated and erected by McClintic-Marshall Construction Company, Pittsburgh, Pa.; the Mt. Vernon Bridge Company, Mt. Vernon, Ohio; and the American Bridge Company, New York. The structural steel for the frame of the station and other terminal buildings was fabricated by the Mahon Steel Company, Detroit, Mich.

The Construction Program

Like most railway construction projects in large cities, the prosecution of the work on the Cincinnati Union Terminal involved the clearing of the site of existing improvements before new construction could be undertaken, but at Cincinnati this obstacle was presented in an intensified form because of occupancy of a large part of the site by the terminal facilities of the Southern, which had to be replaced almost in their entirety before more than a beginning could be made in the removal of the old tracks.

Progress in the 5,500,000-cu. yd. grading job was of course the key to the entire construction schedule. Fortunately, an ample source of filling material was developed in Bald Knob, at the top of the bluff on the west side of Mill Creek Valley, close to the terminal site, and with the advantages of ready accessibility to the line of the Chesapeake & Ohio of Indiana. Supplementing this supply, more than a million cubic yards of selected filling material was taken from a sand and gravel pit, 16 miles out on this same railway. The grading methods were described in detail in articles in the *Railway Age* of May 7, 1931, and January 14, 1933.

Because of these complications it became apparent at the start that a carefully prepared construction schedule would have to be drawn up, in which the dates for the starting and completion of each unit of the work were clearly co-ordinated with all other units that affected it in any way. While this schedule was necessarily modified to meet unforeseen contingencies, the resulting revisions were not allowed to interfere with the basic plan, which was rigidly followed from start to finish; in fact, the construction schedule was shortened rather than lengthened.

The grading was begun late in August, 1929, and by June, 1930, the Southern was enabled to take possession of the new yard, and to abandon the old facilities completely by November of that year. Work on the new station building foundations was started in the spring of 1931, so that less than 24 months time was taken in completing that portion of the project.

The project was carried out by the Cincinnati Union Terminal Company, of which H. A. Worcester has been president since its organization, the actual planning and construction being under the direction of Col. Henry M. Waite, chief engineer. Alfred Fellheimer and Stewart Wagner of New York were the architects for the station building. Included in Colonel Waite's staff were, C. A. Wilson, consulting engineer; G. P. Stowitts, in the beginning engineer of design and later engineer of construction; E. W. Clark, special engineer; Edgar D. Tyler, architect; Pusey Jones, engineer of design (succeeding J. C. V. Christensen, deceased); H. E. Whitehead, assistant engineer of design; Edison Brock, mechanical engineer; Aaron H. Sullivan, electrical engineer; L. A. Gillett, structural engineer; J. B. Sullivan, track engineer and chief draftsman, and G. H. Chapman, assistant engineer of construction. E. K. Post, signal engineer on the staff of the chief signal engineer of the Pennsylvania, served as consulting engineer with reference to interlocking facilities. W. R. Kellogg was real estate agent, Earl Roberts, engineer accountant, and R. J. Bear, J. M. Belknap and G. H. Wells, district engineers.

The terminal project embraced the work of many contractors of whom it is possible to mention but a few. The grading of the terminal area was done by Winston Brothers Company, Minneapolis, Minn.; and the track laying and surfacing by the C. G. Kershaw Contracting Company, Birmingham, Ala. The station building and the mail building were constructed under general contracts by James Stewart & Co., Inc., New York. Similarly, general contracts for the express building and the power plant building were awarded to the Ferro Concrete Construction Company, Cincinnati, and to the Parkway Construction Company, Cincinnati, for the enginehouse.

Effect of Present Car Condition on Expeditious Freight Handling*

At least 75 per cent of the loaded cars delayed for repairs in Chicago in 1932 were defective when loaded—41 per cent privately owned

By C. J. Nelson

Superintendent of Interchange, The Chicago Car Interchange Bureau

ONLY a few years ago, the railroads of our country began to realize that the unrestricted transferring of loads from freight cars resulted in unnecessary losses of several million dollars a year, which, by well-directed efforts on the part of car men, has gradually been reduced to a comparatively insignificant figure, and it would not seem unreasonable to assume that similar effort on the part of all concerned would prove equally effective in reducing loaded-car failures.

It is also true that not long ago the cars loaded with perishable freight received practically no more consideration, so far as making expeditious repairs in transit were concerned, than did the car loaded with non-perishable commodities, which, after lengthy and well-founded complaints from the shippers, finally resulted in strenuous efforts being made toward making repairs so expeditiously in Chicago that the great majority are now reaching destination practically on scheduled time. This important feature is being closely supervised by the General Managers' Association of Chicago, to whom a detailed monthly report must be made by The Chicago Car Interchange Bureau showing all the information necessary for the general managers to decide whether or not all concerned are contributing as they should toward producing the desired results. During December, 1930, the beginning of our campaign, 600 cars loaded with perishable freight were held for repairs in Chicago, immediately after having been received from connecting lines. Of these, 298, or 1 of each 111, cars delivered were delayed to the extent of missing scheduled connections, and the average per month in 1932 was 1 of each 600 cars.

Transfers and Delays to Perishables Reduced

To illustrate what can be accomplished along these lines, all but 40 of 4,112 car loads of perishable freight, placed on the repair tracks of a Chicago road during the year 1932, were repaired in time to make scheduled connections. Of this number, 1,735 cars required the renewal of one or more pairs of wheels, which operation is frequently being performed in 15 or 20 minutes.

Prior to the remedial campaign, the Chicago roads were, due to such delays, paying out approximately $200,000 a year by reason of declining markets, etc., and the excellent team work on the part of the Chicago car men has practically eliminated these expensive claims.

Of 7,775 car loads of perishable freight repaired in interchange within the Chicago territory during the year 1932, 6,851 were of private ownership, which should be of interest if not concern to the owners of such equipment.

These comments are made, not with the thought of intimating that the maintenance of the privately owned cars does not compare favorably with railroad-owned cars, but to question whether such cars, designed to carry high class and perishable commodities, should not be conditioned, at all times, to carry their loads to destination without repairs in transit, barring unavoidable failures and accidents.

The most deterrent features connected with maintenance are the vigorous protests registered by many private car owners against the carriers making repairs to their cars, and it is impossible to understand just how such action can prove profitable to them. Would it not be far better and to the best interest of all to secure the same hearty co-operation from all the private car owners, as we do from some, in having their equipment properly maintained, as well as having them refrain from such methods as making comparisons between the carriers of the cost of repairs on a mileage basis. I am not unmindful of the fact that pressure brought to bear on car inspectors, usually based on serious accidents, occasionally causes them to become over-cautious, but each of such cases should, in my judgment, be handled directly with the carrier on its merits.

In selecting proper cars for loading, the number of privately owned cars available is few, as compared with the railroad-owned cars. In other words, the culling process of the former is limited, while the numbers of the latter from which to choose are invariably large, which appears to be another valid reason for better maintenance of private cars.

Another well-known and deplorable fact, having no small effect on the matter, is that some private car owners do not look with favor upon the rejection of loaded cars offered to the carriers from their respective plants, and that the keen desire on the part of the carriers to please such car owners and shippers too frequently results in cars being accepted with defects which should have been repaired before loading. I would say that anyone viewing this from a neutral standpoint would emphatically decide that a car load once offered to and rejected by a carrier should never be diverted to a competing carrier.

The tendency on the part of many shippers seems to be towards the development of equipment especially suitable for their respective products, making it, in my opinion, all the more desirable to establish clean-cut harmony and co-operation between the carriers and private car owners. I would be unfair if, in connection with this, I failed to mention that a number of private car owners who have long ago recognized the wisdom of good maintenance and co-operation with the carriers are continually and intelligently improving their facilities; in fact, doing all that is humanly possible to assist in the improvement of rail transportation, which, no doubt,

*Abstract of a paper presented before the regular monthly meeting of the Car Foremen's Association of Chicago, held on April 10.

to a great extent, accounts for their steady progress.

Further, recent studies have revealed that the substantial losses to the carriers created by the shopping of all types of loaded freight cars in transit, by reason of inadequately conditioned running parts, surely warrants greater activity for better conditioning of such items. This opinion is based on recent investigations which revealed that at least 1 of each 45 cars had to be placed on receiving lines' shop tracks for repairs immediately after having been received from connecting lines within the Chicago territory, with some roads ranging downward to 1 of 22. This does not include the loaded cars shopped for repairs by loading carriers, or at other than interchange points, which probably exceeds the number shopped in interchange.

This, no doubt, reflects general conditions throughout this country, and, taking into consideration the facts (1) that 46 million cars were loaded with revenue freight in the United States during the reasonably normal year of 1930; (2) that the average delay per car is 18 hours; (3) that the average cost, based on studies made in 1930, of moving a car to and from a repair track was $4, not to mention the average claim per loaded car, it is an easy matter to decide that the total loss is tremendous.

Bureau's Study Extended to Causes of Delays to All Loaded Cars

With a keen desire to improve this condition, the General Managers' Association of Chicago decided to have its car interchange bureau function in connection with this problem along the same lines as car loads of perishables, with the addition of having bureau representatives inspect the defective material removed from all loaded cars placed on shop tracks immediately after having been received from connecting lines within the Chicago territory, and making reports of conditions found to officers who are in a position to assist in improving the situation.

Defective Parts on Loaded Cars Shopped in the Chicago Territory During 1932

	Per cent
Wheels	31
Brake beams or attachments	15
Brakes cleaned account old dates or being inoperative	10
Journal bearings	6
Column and journal-box bolts	7
Truck springs	5
Couplers, yokes, yoke rivets and draft-gear parts	9
Safety appliances	6
Miscellaneous, such as truck sides, arch bars, bolsters, underframe defects, spring plank, side bearings, train lines, door defects, about 1 per cent each, or a total of	11

Such action, it was thought, would have a tendency to:

(1) Create greater efforts towards having cars selected for loading that are in suitable condition to carry loads to destination without requiring repairs in transit.

(2) Bring about a better understanding between carriers and private car owners as to the nature of "running defects" on account of which loaded cars are being shopped.

(3) To ascertain whether or not the condemnation of the material which caused the shopping of such cars is warranted.

The first month this plan was in effect revealed that 41 per cent of the loaded cars were of private ownership, that 30 per cent were owners' cars loaded on their own rails, and that 21 per cent had been loaded in the Chicago territory. The defects existed on 69 per cent when loaded and on 31 per cent prior to being placed in trains for delivery to connecting lines. While it was thought that quite a number of the defects existed on the latter when loaded, we allowed for the doubt, making it safe to say that the above is conservative, and that at least 75 per cent of the cars are being loaded with the defects requiring repairs en route.

The defective items found on the 39,629 loaded cars shopped in the Chicago territory during the year 1932 are shown in the table. We found that many cars were placed on repair tracks for the purpose of renewing items which could easily have been performed in the train yards, thereby eliminating the expense of switching them to and from the shop tracks, as well as eliminating the delay.

Additional delays and expenses were brought about by specializing on certain items, which it was thought was principally due to overly exacting instructions emanating from various accidents. I have in mind, for example, cases where derailments are caused by failure of journal-box bolts, resulting in instructions being issued to the effect that loaded cars must positively not be allowed to go forward until such bolts are absolutely tight, making no distinction between steel truck sides secured to journal boxes with bolts and the archbar construction.

While I do not intend to infer that chances should be taken in running cars with dangerously loose or defective parts, I have been convinced that many thousands of dollars can be saved by exercising greater care in the wording of instructions so as to permit the men to whom they are directed to use their own best judgment in deciding whether or not it is safe to defer such repairs until after the cars have been unloaded.

There is no doubt in my mind but that more frequent studies on the part of the higher mechanical officers of the various parts renewed under loaded cars and favoring the supervisors in direct charge of repairs with constructive advice regarding judgment defects, would be well worth while, which would also prove true in connection with defect for which the American Railway Association has prescribed limits of wear.

I voice the opinions of a number of mechanical officers by stating that carefully worded instructions could safely be issued to permit wheels, having just reached condemning limits, to remain under cars until they are unloaded, particularly so in cases where the defects in connection with which a liberal margin of safety has been allowed consist of worn flanges, seamy rims, broken rims, etc. It is quite possible that the Committee on Wheels of the American Railway Association would be glad to assist anyone in deciding as to the kind of wheel defects which could be so handled with safety. It would probably also be consistent to provide reasonable elasticity in connection with the removal of the brake heads, hangers, pins, bolts, etc., specified in A. R. A. mechanical rule No. 63. The shopping of loaded cars for the renewal of these items has increased to no small extent since definite limits of wear were established and, until such time as special efforts are made to renew them on empty cars, it would, no doubt, be economical to refrain from being overly exacting when found worn to, or slightly beyond the condemning limits on loaded cars.

The fundamental problem, however, is to provide and select cars in proper condition for loading, but I fully appreciate how difficult it is to solve. What the effect would be if the inspection of empty cars were equally as rigid as the inspection of loaded cars is problematical, but it is pretty safe to prophesy that such action would soon create a situation to verify the fact that it would be desirable to apply the present limited appropriations towards repairing the "running defects," and set aside the cars requiring heavier repairs for the time being. While I agree that the so-called "cycle repair plan" is

ideal, I believe that greater efforts should, at all times, especially so in times like the present, be made towards better upkeep of the "running defects" which usually are not acceptable on cars under load.

To bring out more clearly what I have in mind, I will again use the journal-box bolts as the example by stating that if loaded cars are not considered safe to handle with these bolts loose, then it would seem logical to keep a sharp lookout for them on empty cars, with the understanding that they must not continue in service until they have been tightened or renewed, also applying the same policy to all similar defects which are generally ignored on empty cars.

It is a well-known fact that there is a marked difference between the inspection and disposition of empty and loaded cars, that empty cars, as a general rule, are not cut out for repairs if at all safe to handle, and that many of the defects passed up on empty cars are immediately condemned when found under loaded cars. The desired remedial action would, of course, be to treat the empty cars exactly the same as the loaded cars, at least so far as running defects are concerned, with the possible exception that the same tolerance allowed to get loaded cars to destination with deferred repairs should not apply to empty cars.

It can hardly be expected that such a revolutionary procedure will be attempted all at once, but I am wondering if it is not high time to begin gradually functioning toward that goal, and at the same time giving more serious consideration towards retiring cars which, although they may be in perfect physical condition, are not designed for the high speed of today, which, no doubt, will be increased as time goes on. The fact that the amount of freight equipment far exceeds present-day needs makes it apparent that efforts along these lines would not be out of order.

The N. & W. in 1932

THE Norfolk & Western, despite a decline of 46.6 per cent from 1929 in its operating revenues, was still able, in 1932, to show net income of $16,811,918, equivalent after payment of dividends on its adjustment preferred stock, to $11.30 per share on its common stock. Actual dividend payments were $9 per share (the quarterly rate being 2½ per cent for the first half of the year and 2 per cent for the latter half) and the company's profit and loss credit balance increased over $800,000 in comparison with the previous year.

Details of revenues and expenses are given in Table I which shows by comparing 1929 and 1932 the general decline in revenues and how these reductions were absorbed. The management brought about economies in operating expenses, as the table shows, averaging 42.9 per cent, which did not fall far behind the decline in revenue. Reductions in maintenance of equipment expenses, it will be noted, were exactly in proportion to the decline in revenues, whereas that in transportation expenses was somewhat less and, in maintenance of way expenses, somewhat more. There was a gratifying decline of 30 per cent in taxation, but much of this was accounted for by the reduced net income, bringing lower income taxes automatically. Even so the taxgatherer, roughly speaking, got one dollar for every two which went to the owners of the property. The public interest in railroad solvency is thus quite apparent, the more so because every dollar the railroad pays in taxes is clear gain to the community and does not have to be spent, as do the receipts from other forms of transport, on facilities to keep them in operation.

Table II compares selected operating statistics of the boom and depression years. The tendency toward lighter loading of cars and trains will be observed, but it was definitely held to a minimum. Train-hours declined 44.2 per cent, or almost as much as gross ton-miles. Average

Table I—Norfolk & Western—Revenues and Expenses of 1932 and 1929 Compared

	1932	1929	Decrease Per Cent
Freight Revenue	$58,851,539	$108,351,499	45.7
Passenger Revenue	1,673,662	5,110,928	67.3
Total Operating Revenue	62,775,611	117,631,752	46.6
Maintenance of Way Expenses	6,495,838	14,838,067	56.2
Maintenance of Equipment Expenses	11,136,166	20,848,612	46.6
Transportation Expenses	15,831,447	25,897,415	38.9
Total Operating Expenses	37,745,532	66,051,247	42.9
Operating Ratio	60.13	56.15	*7.1
Net Revenue from Railway Operation	25,030,078	51,580,504	51.5
Tax Accruals	7,200,000	10,300,000	30.0
Operating Income	17,815,309	41,246,346	56.8
Net Railway Operating Income	19,161,097	44,208,196	56.7
Gross Income	21,365,057	47,143,912	54.7
Deductions from Gross Income	4,553,139	5,357,451	15.0
Net Income	16,811,918	41,786,461	59.8

* Increase.

tons per train declined, but train speed was increased so that the reduction in gross and net ton-miles per train-hour was small. Car efficiency, as reflected in the percentage of loaded to total car-miles, increased slightly and a sharp improvement was shown in fuel performance.

The average rate charged by the railway, while reflecting a slight rise, was still less than 7 mills per ton per mile, which might well be pondered by persons who favor motor and inland waterway transport because of their "cheapness."

The passenger business of the company has declined almost to the vanishing point—receipts from this traffic last year totaling but 2.7 per cent of gross revenues. The main source of the company's traffic is of course the high grade bituminous coal produced in its territory, the tonnage of which accounted in 1932 for 81.76 of total revenue freight. Comparing 1932 with 1929, the sharpest declines, in percentages, were experienced in forest

Table II—Norfolk & Western—Selected Operating Statistics, 1929 and 1932 Compared

	1932	1929	Per Cent Decrease
Gross Ton-Miles (thousands)	18,050,564	33,125,629	45.5
Net Ton-Miles (Rev. and Non-Rev. thousands)	9,346,648	17,779,230	47.4
Freight Train-Hours	424,178	759,686	44.2
Net Ton-Miles per Train-Mile	1,501	1,711	12.0
Per Cent Loaded to Total Car-Miles	58.7	58.4	*0.6
Train-Miles per Train-Hour	14.7	13.7	*7.3
Gross Ton-Miles per Train-Hour	42,554	43,604	2.4
Net Ton-Miles per Train-Hour	22,035	23,403	5.8
Lb. of Coal per 1000 Gross Ton-Miles	112	121	7.0
Per Cent Freight Cars Unserviceable	2.2	1.1	*100.0
Per Cent Locomotives Unserviceable	50.8	52.7	3.6
Average Haul of Freight (miles)	282.25	280.18	*0.7
Average Rate per Ton-Mile (cents)	0.685	0.648	*5.8

* Increase.

products. The tonnage of a few commodities—among them wheat, poultry, eggs and salt—actually showed increases in volume.

The company has continued its aggressive policy to stimulate the use of coal produced by its patrons. To this end agencies have been established at a number of important centers of consumption which publicize the advantages of the particular grades of fuel mined on the N. & W. and instruct consumers in its efficient use. In addition, the company has conducted tests of its coal in various types of domestic stokers and has developed

information by the dissemination of which owners of such stokers may use its coal with the best results. Also, the merchandising of fuel has continued to be the keynote of the company's admirable and consistent advertising policy — which includes its merchandise and passenger services as well.

A number of new industries were located on the N. & W. during 1932, representing a total capitalization of $4,930,000 and employing 2,741 persons. Several additions and betterments were carried out during the year—outstanding among them being the laying of 73 miles of track with 130-lb. rail, the strengthening of bridges and several grade crossing eliminations. New equipment acquired during the year included one locomotive, 192 hopper cars and four tank cars—all built in the company's own shops at Roanoke.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended April 8 failed to keep up the increases which had been shown for three preceding weeks and amounted to only 487,296 cars. This was a reduction of 7,292 cars as compared with the week before, although only 58,327 cars less than the loading for the corresponding week of last year. Loading of miscellaneous and l. c. l. freight and livestock showed increases as compared with the week before and grain showed an increase as compared with last year, but coal showed a reduction both as compared with last year and the preceding week. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, April 8, 1933

Districts	1933	1932	1931
Eastern	110,618	130,622	170,742
Allegheny	89,523	111,116	152,325
Pocahontas	31,636	32,434	40,533
Southern	81,486	84,534	119,341
Northwestern	55,693	61,371	84,054
Central Western	72,488	80,265	105,300
Southwestern	45,852	45,281	64,977
Total Western Districts	174,033	186,917	254,331
Total All Roads	487,296	545,623	737,272
Commodities			
Grain and Grain Products	33,079	29,056	36,924
Live Stock	15,331	17,211	20,420
Coal	80,794	88,188	116,152
Coke	3,451	4,059	7,250
Forest Products	16,655	19,595	32,574
Ore	1,732	2,673	6,636
Mdse. L. C. L.	160,650	187,906	223,631
Miscellaneous	175,604	196,935	293,685
April 8	487,296	545,623	737,272
April 1	494,588	544,961	727,852
March 25	475,850	561,118	738,880
March 18	449,712	584,759	741,253
March 11	437,813	575,481	733,580
Cumulative total, 14 weeks	6,691,663	7,881,413	10,109,382

Car Loading in Canada

Car loading in Canada for the week ended April 8 amounted to 32,328 cars, or 2,256 cars less than for the previous week, and the index number dropped from 59.11 to 56.48.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
April 8, 1933	32,328	17,882
April 1, 1933	34,584	18,016
March 25, 1933	35,532	16,418
April 9, 1932	41,432	21,586
Cumulative Totals for Canada:		
April 8, 1933	463,127	240,135
April 9, 1932	576,765	303,610
April 4, 1931	653,158	391,518

Accident Record for 1932

THE Interstate Commerce Commission's accident report for the calendar year 1932, for which advance sheets (subject to correction) were issued on April 11, again shows large reductions in the totals of killed and injured under practically all heads, as was to be expected from the great diminution in both passenger and freight traffic. In the total of passengers killed in train accidents we have the all-time "low" of only one person killed in the whole country. This remarkable record, for eleven years, shows:

1932	1	1928	16
1931	4	1927	10
1930	7	Five years preceding (average per year)	77
1929	36		

The passenger killed was a railroad employee off duty, riding in a rail-motor car which collided with another train. The total of passengers killed in both train and train-service accidents (23) equals an average of 2 per 100 million locomotive-miles. (Train service accidents are those occurring in connection with the movement of trains where there is no collision or derailment. As in former years the complete record, to be published later, is likely to show considerable numbers of persons here reported as injured who subsequently died.)

The principal totals for the year as shown in the present report are given in Table A, below, together with data for the two years next preceding.

Table A.—Casualties on Railroads, Three Years

	1932 Killed	1932 Injd.	1931 Killed	1931 Injd.	1930 Killed	1930 Injd.
Passengers						
In train accidents	1	410	4	493	7	790
Train service accidents	22	1,501	36	1,609	43	1,875
Total train and train service	23	1,911	40	2,102	50	2,665
Non-train accidents	5	455	1	587	0	515
Grand total, passengers	28	2,366	41	2,689	50	3,180
Employees						
In train accidents	63	326	92	414	129	633
Train service accidents	367	6,861	396	9,019	583	12,900
Total train and train service	430	7,187	488	9,433	712	13,533
Non-train accidents	127	10,227	156	13,521	223	21,792
Grand total, employees	557	17,414	644	22,954	935	35,325
Other Persons						
In train accidents	119	261	133	301	160	359
Train service accidents	3,952	7,798	4,192	8,221	4,249	9,005
Total train and train service	4,071	8,059	4,325	8,522	4,409	9,364
Non-train accidents	91	1,380	89	1,491	87	1,561
Grand total, other persons	4,162	9,439	4,414	10,013	4,496	10,925
Total, All Classes of Persons						
In train accidents	183	997	229	1,208	296	1,782
Train service accidents	4,341	16,160	4,624	18,849	4,875	23,780
Total train and train service	4,524	17,157	4,853	20,057	5,171	25,562
Non-train accidents	223	12,062	246	15,599	310	23,868
Grand total	4,747	29,219	5,099	35,656	5,481	49,430

The report gives the total locomotive mileage for the 12 months as 1,079.7 millions as compared with 1,308.8 millions in 1931; total persons killed per million locomotive-miles, 4.19 in 1932 and 3.71 in 1931; injured, 15.89 in 1932 and 15.32 in 1931. The number of man-hours reported by Class I railroads is 2,286,551.6 thousands in 1932, as compared with 2,930,660.9 thousands in 1931.

Under the head of total employees on duty, the casualties per million man-hours was 0.24 as compared with 0.22 in 1931; and of injured, 7.62 in 1932 as compared with 7.83 in 1931.

The total number of persons killed at highway crossings (included partly under train accidents and partly under train service accidents) was 1,525 as compared with 1,811 in the year preceding, and of injured 3,989 as compared with 4,657. About three per cent of those reported here as killed were classed as trespassers.

Motor Transport Section

Store-Door Service Adopted by Southeastern Roads

L. & N., N. C. & St. L., G. M. & N. and five short lines offer shippers pick-up and delivery of l.c.l. freight

STORE-DOOR pick-up and delivery of l.c.l. freight, now generally offered to shippers and consignees by most railways in the West and Middle West and in New England, was adopted on a large scale by eight roads in the Southern Territory on March 15. The roads involved in this most recent extension of store-door service are the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, the Gulf, Mobile & Northern, the New Orleans Great Northern, the Tennessee, Alabama & Georgia, the Flemingsburg & Northern, the Carrollton and the Fernwood, Columbia & Gulf. The occasion marks the first large-scale introduction of store-door pick-up and delivery service to the shipping public by railways in the Southeast.

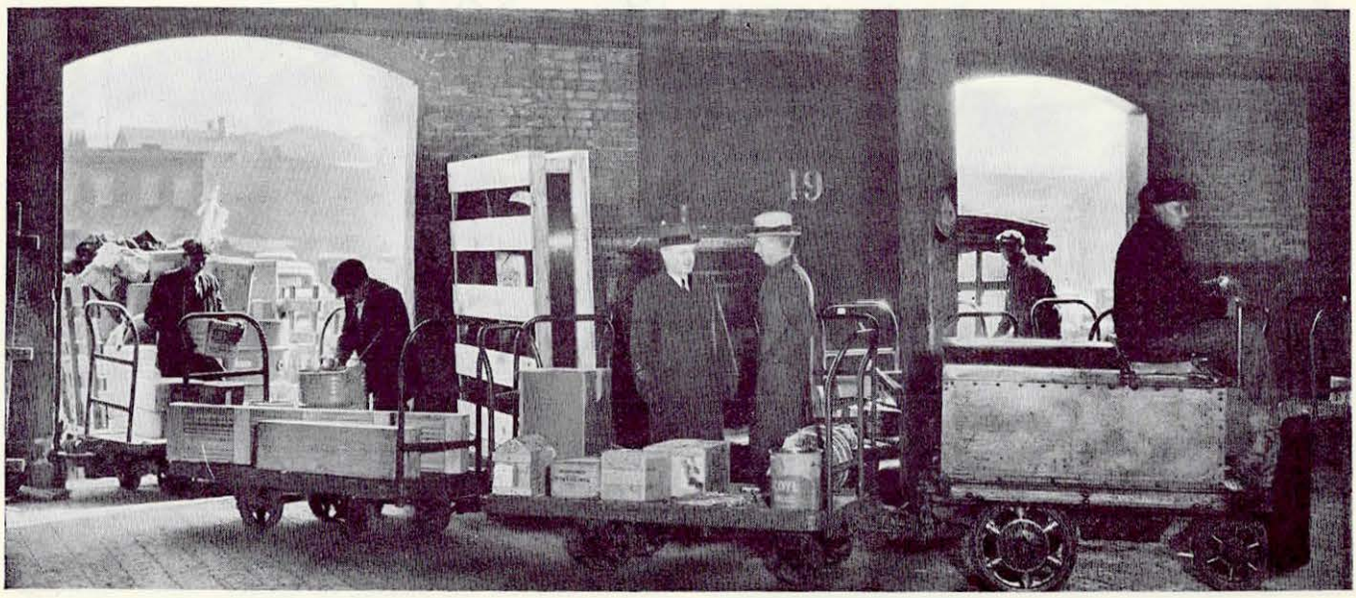
At the outset, nearly 500 stations along the lines of the 8 railways involved are offering the new service. These stations are located in the states of Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Georgia, Florida, Virginia, North Carolina, Indiana, Illinois, Ohio and Missouri. It is understood that the pick-up and delivery service will be offered at additional stations from time to time in the future.

The railways have adopted the plan of contracting for motor truck service necessary to carry out the pick-up and delivery plan. The contracting transfer companies which will perform the service for the railroads are fully bonded and insured. They are authorized to sign bills of lading, collect freight charges, etc., for the railroad agents, so that shippers and receivers of freight under the pick-up and delivery tariff will not be put to any inconvenience in using the service.

Free Service, with Reservations

There is no charge for the pick-up and delivery service, the regular station-to-station rates applying for pick-up and delivery as well as the line haul, on l.c.l. freight moving between pick-up and delivery points within the Southern Freight Association territory, where the distance from the shipping point to the destination is not more than 230 miles. The tariff does not express the scope of the free pick-up and delivery arrangements in terms of mileage, however. It limits the maximum distance of the movement of freight on which the free service will apply to "between points where the first-class rate is $1.08 or less per 100 lb." Translated, this means in terms of mileage a distance of approximately 230 miles.

Provision is made for furnishing pick-up and delivery service for freight which does not fall within the limitations of the free zone. When pick-up or delivery



Receiving Freight from Pick-up Truck at the Ninth Street Freight House of the Louisville & Nashville at Louisville

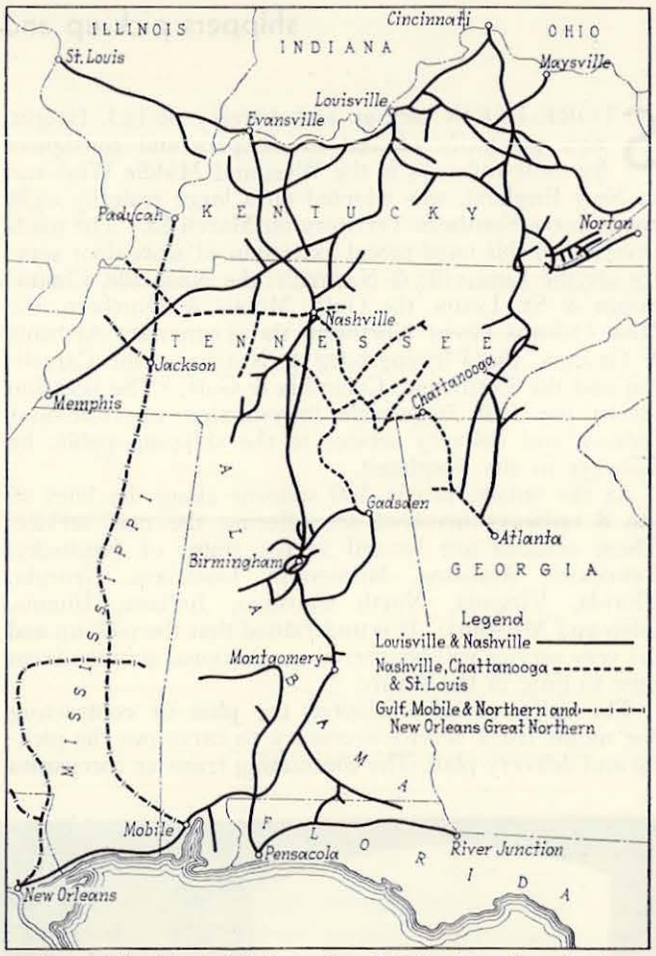
Loading a Delivery Truck at the Railway Freight Station

service, or both, is desired on l.c.l. freight moving between two pick-up and delivery stations more than 230 miles apart, this will be handled by the railroad contractors at a rate of 10 cents per 100 lb. in addition to the regular freight charges. Provision has also been made for "one-end" service, either pick-up or delivery, on traffic moving between a pick-up and delivery station and a point on some other line within the Southern Territory which is not a party to the tariff. This service is free or at the 10-cent rate, according to distance. One-end service is also available on shipments moving between pick-up and delivery stations and points not within the Southern Territory. In such cases, the pick-up service is performed for a charge of 10 cents a 100 lb., but no delivery service is provided at the destination point outside the Southern Territory.

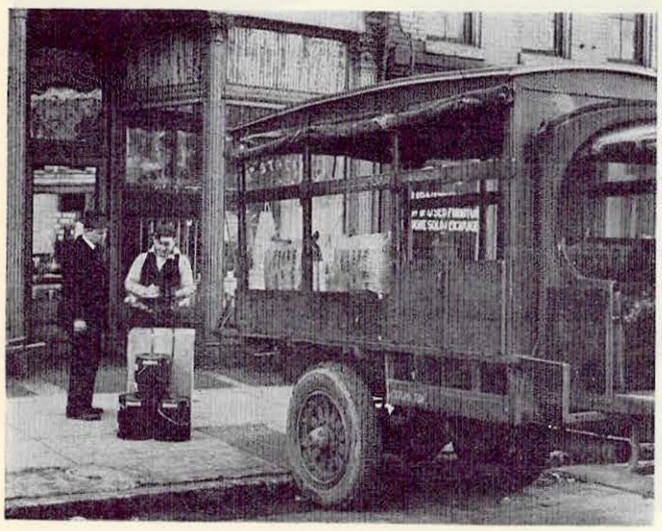
Another item of the tariff stipulates that an allowance of 5 cents per 100 lb. will be made to shippers or receivers of freight who perform their own pick-up or delivery service when such shipments are entitled to the free service provided by the railways. No allowance is made on traffic not entitled to free service, except in cases where delivery service has been requested and paid for by the consignee.

For the present, the service applies only to l.c.l. freight and is limited to the nearly 500 stations where arrangements have been made to provide the pick-up and delivery service. Shipments accorded transit privileges are not entitled to the pick-up and delivery service, and there are limitations as to the maximum weight and size of single articles to which the service applies. The maximum length of any single article or package on which pick-up or delivery will be performed is 22 ft. Single articles or packages more than 6 ft. in width or height are limited to 14 ft. in length. Pieces weighing 1,000 lb. or over are not entitled to the free service, unless special arrangements are made in advance.

Any kind of l.c.l. freight is accorded the service except alcoholic beverages, cotton, cotton linters or regins, cotton seed hull fibers or shavings, explosives, fertilizer or fertilizer material, household goods and personal effects, livestock and poultry, plate glass and unmanufactured



Lines of the Principal Railways Now Offering Store Door Service



Door-Delivery of Freight by One of the Railway Truck Contractors

tobacco. L.c.l. shipments handled in peddler car service are not given the pick-up service, but they are accorded delivery service. Delivery service is also performed on perishable freight shipments, and pick-up service is given on such shipments for handling in scheduled refrigerator cars on days when such cars are scheduled. Otherwise, the pick-up service is accorded only to perishable shipments intended for handling in box cars.

Except as otherwise indicated in the tariff, the pick-up or delivery service is confined to the corporate limits of the city or town in which the origin or destination station is located. At stations not located within incorporated cities or towns, the trucking area is limited to a radius of one mile from the freight station. When distances are used to describe the pick-up or delivery limits, such distances are computed via the shortest, normal route from or to the railway's freight station.

Pennsylvania and Long Island Plan New York Store-Door Service

Co-ordinated operations for both carload and l. c. l. freight will be inaugurated on May 1 if tariff now on file with the I. C. C. receives approval

STORE-DOOR collection and delivery services for both carload and l.c.l. shipments will be inaugurated in New York City and its New Jersey suburbs by the Pennsylvania and the Long Island on May 1, if a tariff now on file with the Interstate Commerce Commission is allowed to become effective. The tariff, which publishes charges in addition to railroad rates for the proposed services, was issued April 10 on 20 days' notice under special permission of the I.C.C.

The decision of the Pennsylvania and the Long Island to act independently is the culmination of prolonged efforts to perfect a tariff under which all railroads serving New York would extend their services in that city to include store-door collection and delivery. The present Pennsylvania-Long Island tariff is an amended issue of the original joint agency tariff, covering the proposed services, which was first published by Agent W. S. Curlett on September 15, 1932, with an effective date of October 17, 1932. Exceptions to certain features of this original tariff were taken by the Interstate Commerce Commission's tariff bureau which held that some provisions, especially those relating to the territorial limits proposed for the store-door services, were not sufficiently definite. In order to make the revisions which would meet these I.C.C. objections the effective date was first changed from October 17, 1932, to November 17, 1932, and was subsequently postponed from month to month until April 10 when the revised tariff was issued with the participating carriers reduced from an original list of 16 to only the Pennsylvania, the Long Island and the New York & Long Branch. The New York & Long Branch is listed as an "intermediate carrier only."

Territorial Limits of Service

The territorial limits of the proposed P. R. R. and Long Island services cover a wide area in the New York City boroughs of Manhattan, the Bronx, Brooklyn and Queens as well as in nearby New Jersey communities. These limits, which are now set out in considerable detail in the tariff, may be defined roughly as areas within two miles of the nearest freight station, including off-track stations. In New Jersey the tariff applies within the corporate limits of the following municipalities: Bayonne, Elizabeth, Harrison, Jersey City, Kearny, Linden, Newark, Perth Amboy, Rahway, South Amboy and Woodbridge. Only carload freight is to be handled in collection and delivery services at certain specified points. The tariff stipulates that, unless otherwise indicated, the store-door services will be confined to the corporate limits of the municipality within which origin or destination station is located.

With certain named exceptions, such as perishables, bulk freight, explosives and single packages of unusual size and weight, the collection and delivery services will be afforded all carload and l.c.l. freight. The service is, of course, optional and shippers desiring collection service must notify the carrier in ample time to enable the latter to make the pick-up "in accordance with the closing hours of places of business and railroad freight stations." The entire shipment must be available at one point within one working day and consigned to one consignee at one destination; freight will not be accepted unless it is available at one place on the sidewalk or at street level or at the shipper's truck platform if the latter be accessible to highway vehicles.

Regulations Governing Deliveries

If delivery service is desired the tariff stipulates that freight should be consigned in the bill-of-lading and shipping order for "C. & D. Service." When freight moving under carload rates, and also freight in lots of 30,000 lb. or more not having a carload rating, is not consigned for the delivery service and such service is desired, the consignee must notify the carrier "in sufficient time prior to departure of the car from terminal yard serving destination to enable diversion for 'C. & D. Service' to be accomplished." Such diversions are to be subject to regular diversion and reconsignment charges.

Further regulations governing delivery services stipulate that: Consignee must be in position to accept delivery when tendered by truckman and freight will be trucked to only one point of delivery. Delivery will be made only during usual business hours at one place on sidewalk or at street level or at truck platform of consignee, and in the latter case only when the platform is accessible to truckman's vehicles. Freight must be unloaded from truck at delivery point to which consigned in bill-of-lading. The consignee must furnish labor necessary to assist the truckman in prompt unloading of vehicles. Freight charged at carload rates, also freight in lots of 30,000 lb. or more not having a carload rating, consigned for "C. & D. Service," on arrival at terminal yards serving destination, will be held, and the consignee notified of arrival at address shown in bill-of-lading—such freight, if not ordered for delivery by truck to the delivery point shown in bill-of-lading within 48 hours (excluding Sundays and full legal holidays) following the first 7:00 a.m. after date on which notice of arrival is sent or given to consignee, will be subject to the same demurrage or storage charges as would apply had the freight been consigned for local delivery at the point where held. Orders will be accepted only for the delivery at one time of the entire shipment. Freight charged at l.c.l. rates, also freight in lots of less than 30,000 lb. not having a carload rating, consigned for "C. & D. Service," will on arrival be trucked to the address to which consigned.

When freight charged at carload rates, also freight in lots of 30,000 lb. or more not having a carload rating, is consigned "to order" or in such other manner as to

require surrender of bill-of-lading before delivery, it will be considered as not ordered for delivery by the consignee until the bill-of-lading has been surrendered or satisfactory indemnity in lieu thereof has been furnished. Freight charged at l.c.l. rates, including freight not having a carload rating when in lots of less than 30,000 lb., consigned "to order" or in such other manner as to require surrender of the bill-of-lading before delivery will be trucked to designated place of delivery and will not be delivered to consignee until the bill-of-lading is surrendered. In cases where consignee or owner is not in a position to surrender bill-of-lading, the freight will be immediately placed in storage at the expense of the consignee or owner. Any freight which a consignee fails to accept on the day it is tendered by a truckman, will be immediately placed in storage at the expense of the consignee or owner.

The rule governing free time and detention charges for delays to trucks provides that when a truck reports at a collection or delivery point the shipper or consignee, as the case may be, must provide space for the truck and one hour from the time of its arrival will be considered free time, except where loads exceed 15,000 lb. per truck when additional free time of 15 minutes for each 5,000 lb. or fraction thereof in excess of 15,000 lb. per truck will be allowed. A truck detained beyond the free time will be subject to a detention charge of 75 cents for each 15 minutes or fraction thereof of such delay.

Trucking arrangements for the service have not been made public. In any event, however, the tariff states that truckmen operating under its provisions will act as agents of the participating rail carriers; thus the "constructive station" idea, which made the truckmen agents of the carriers for a portion of the highway movement and of the shipper or consignee for the remainder, will not be revived.

Trucking charges, which will be collected from the consignee of inbound freight and from the shipper of outbound freight, are based on the carload minimums of the official classification. The detailed schedule as proposed follows:

Where the official classification carload minimum is 36,000 lb. and over, six cents per 100 lb.; under 36,000 lb. and down to 30,000 lb., seven cents; to the 24,000-lb. minimum, 10 cents; to the 20,000-lb. minimum, 14 cents; to the 18,000-lb. minimum, 16 cents; to the 14,000-lb. minimum, 18 cents; to the 10,000-lb. minimum, 20 cents. When a carload minimum weight is not provided in the official classification for an article in the form in which it is packed and shipped the trucking rate will be based on the rate for the lowest carload minimum weight provided for the article in any package or form for which a carload minimum weight is provided.

Exceptions in connection with carload freight are provided for newsprint paper in rolls and flour on which the trucking rate will be five cents per 100 lb.; for paper on skids, 8 cents per 100 lb.; for waste paper and rags, 12 cents per 100 lb.; for automobiles and empty van bodies, 25 cents per 100 lb. with a $10 minimum charge. Packages (other than newsprint paper in rolls) weighing more than 1,500 lb. each but not more than 5,000 lb. will be trucked for 18 cents per 100 lb., when such shipments are subject to a carload minimum of 14,000 lb. or higher; if subject to lower minimum these large packages will take trucking rates applicable to such minimum. Raw silk shipments will be subject to a trucking charge of 15 cents per 100 lb. plus 10 cents for each $100 or fraction thereof of valuation. These carload trucking rates include the loading and unloading of cars except that, on outbound freight, staking, blocking, etc., will be done at the expense of the shipper.

Trucking rates for l.c.l. are published as follows: Freight classified in the official classification as first class and lower, 10 cents per 100 lb., minimum per shipment, $1; one and one-fourth times first class and including D-1 class, 20 cents per 100 lb., minimum, $2; higher than D-1 class, 40 cents per 100 lb., minimum, $3. Exceptions are provided for paper on skids, which will be assessed 12 cents per 100 lb., minimum, $1; also, automobiles and empty van bodies moving l.c.l. will take the same trucking rates as when they are carload shipments; l.c.l. packages weighing 1,500 lb. each but not more than 5,000 lb. will be trucked at 22 cents per 100 lb.; raw silk moving l.c.l. will bear a trucking rate of 20 cents per 100 lb., plus 10 cents for each $100 or fraction thereof of valuation and woolens, 25 cents per 100 lb., minimum per shipment, $2. The trucking charge for an l.c.l. package containing freight of more than one class will be computed at the rating and minimum charge provided for the highest classed freight contained in the package; the charge for a shipment of two or more classes of l.c.l., when each class is in a separate package, will be at actual weight and at the rating applicable to each class, subject to the minimum charge for the highest classed freight contained in the shipment.

Two New Truck Models Offered by General Motors

THE General Motors Truck Company, Pontiac, Mich., has announced the beginning of production on two new motor truck models in the medium-duty field. These models are designated as T-33 and T-43 and are identical in design and basic engineering principles, differing only in dimensions and mechanical specifications. Model T-33 is designed for the 3-ton range and Model T-43 for the 4-ton range.

Both models are equipped with the new "257" engine which develops 76 hp. at 2,500 r.p.m., with a sustained torque of 185-ft. lb. at 1,000 to 1,600 r.p.m. Features of this engine are its valve-in-head construction, downdraft carburetion, a statically and dynamically balanced crankshaft with counterweights and harmonic balancer, a hard alloy, cast iron cylinder block and head, special light-weight, semi-steel pistons and steel-backed main bearings.

The frames of the two new models are said to present a stiffness factor higher than the average in their capacity range. The channel section side members are 8-in. deep, 3 in. wide and ¼ in. thick. The 4-speed transmission is of the heavy-duty truck type, while the rear axle is a full-floating, spiral-bevel gear axle with three optional gear ratios in the Model T-33 and two in Model T-43. The universal joints are of the all-metal, oil-lubricated type, with forged four-arm spiders. The springs are of silico-manganese steel with stationary front and drop-forged rear shackles, an auxiliary rear spring being provided above the main spring to counteract sidesway.

The payload capacity of Model T-33 is from 5,585 lb. to 6,550 lb., depending on the body length, and that of Model T-43 is from 6,565 lb. to 9,005 lb. The "straight rating" of Model T-33 is 13,000 lb. and that of the companion model is 16,000 lb.

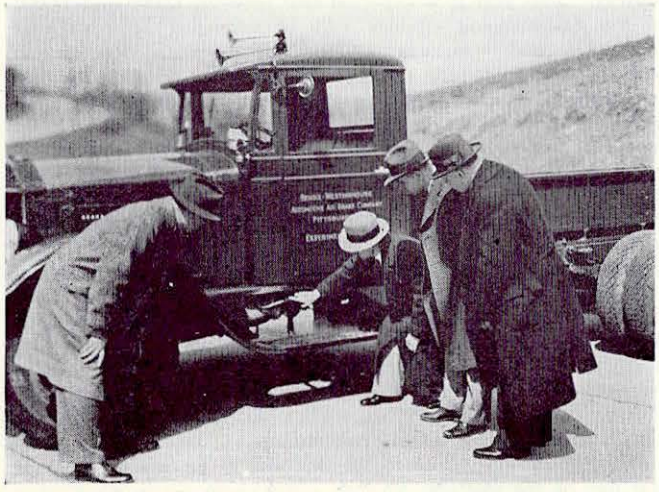
Air Steering Control by Bendix-Westinghouse

AFTER several years of development work and nine months of exhaustive tests on the road in all parts of the country, the Bendix-Westinghouse Automotive Air Brake Company, Pittsburgh, Pa., has placed on the market a new air steering control to meet the steering problem created by the heavier loads now being placed on the front wheels of motor transport vehicles. The air-steering control developed by Bendix-Westinghouse embodies a double-acting cylinder controlled by a double-valve arrangement. It is said to have met its severe road tests with complete success, neither service nor adjustment having been necessary to keep the unit in its original operating condition during 30,000 miles of actual service under all road and climatic conditions.

Among the advantages claimed for the air steering device is its ability to reduce steering to a comparatively slight expenditure of effort on the part of the operator. Further, it is said, its use will permit a substantial reduction of gear ratios. Air steering, it is claimed, provides the operator with a pre-determined resistance or feel exactly proportionate to the angle of the turn, much the same in principle as that encountered in the manually-operated steering gear, with the exception that the resistance is diminished. This is due to the fact that the air steering control involves a combination of manual effort and power in its operation, offering positive control at all times, even in the event of power failure. Another of the advantages mentioned is the ability of the air steering control to compensate automatically for possible shimmying of the wheels, and finally, it is said to effect a substantial reduction in the load on the steering gear worm.

Description of Major Parts

The Bendix-Westinghouse air steering control consists primarily of three major parts; namely, a combination of levers mounted directly on the steering shaft, control valves, and the double-acting cylinder. The control valves are of the self-lapping type and are mounted directly on the double-acting air cylinder, each valve controlling one side of the cylinder. The air pressure delivered to the cylinder is proportionate to the force delivered on the top of the valve piston plunger. The valves are actuated by a rocker arm which insures that air is delivered to only one side of the cylinder at a time. The present Pitman arm of the steering gear is made up for control purposes of three distinct levers—the control lever, the intermediate lever and the Pitman arm. The control lever is fixed directly to the steering shaft, while the intermediate lever is fulcrumed at the Pitman arm through a pin. The lower end is likewise connected to the control lever through a pin. The upper end of the intermediate lever is bored slightly larger than the steering shaft, so that a free motion is obtained for the operation of the control valves. The drag rod is connected at the extreme end of the Pitman arm, and the brake cylinder is connected between the drag rod and pivot point of the intermediate lever. The yoke is mounted on the upper end of the intermediate lever, so that the control rod will be kept in a straight line with the steering gear camshaft.



Inspecting the Air Steering Control in the Bendix-Westinghouse Experimental Truck

Operation of the Air Steering Control

In the operation of the air steering control, manipulation of the steering wheel turns the control lever in either direction. If the steering wheel is manipulated for a right-hand turn, the control lever will move to the right. As there is always present a resistance to the turning of the wheels, the control lever will move the upper end of the intermediate lever to the left, due to the fact that the intermediate lever is hinged on the Pitman arm. The movement of the upper part of the intermediate lever causes a movement of the valve rod and through the rocker arm exerts pressure on the plunger of the control valve, which is connected to the left side of the double-acting piston. Thus air pressure is admitted into the cylinder until the cylinder force is equivalent to the resistance of the wheels to turn, moving the Pitman arm to the right. As long as the steering wheel is turned, the valve remains open. When the movement of the steering wheel is stopped, the movement of the piston continues until it moves the upper end of the intermediate lever to a position which allows the intake valve to close and cut off the additional flow of air. For a left-hand turn, the right-hand control valve is actuated and air is admitted to the right-hand side of the piston, thereby moving the Pitman arm to the left.

White Company To Sell Diesel Trucks

A DIESEL-powered motor truck with a Cummins Diesel engine in an Indiana heavy-duty chassis has been placed on the market by the White Company, Cleveland, Ohio. These trucks are built only on order and the guarantee on the engine is assumed by the Cummins Engine Company, Columbus, Ind.

The general design of the engine is comparable to that of a gasoline engine, except that there are no spark plugs, no electrical distributor and no carburetor. Some of the features incorporated in the design are removable cylinder liners, interchangeable bearing shells and a built-in governor. The engine has a two-plate clutch and four or more forward speeds made possible by the transmission and auxiliary transmission. With six cylinders, the engine develops 125 hp. at 1800 r.p.m.

The Diesel-powered Indiana truck has a rating of 5 to 7 tons. The weight of the chassis is 10,500 lb. and the gross rating of the truck is 28,000 lb.

Odds and Ends . . .

Biggest Engineman Dies

With the death of James O'Grady, the Pennsylvania lost its biggest locomotive engineman. It is said that Mr. O'Grady weighed 400 lb., train-side.

Jig-Saw Puzzles a la Carte

Quick to cater to the popular fancy, the passenger traffic department of the Missouri-Kansas-Texas has supplied a number of its dining cars with jig-saw puzzles, which are made available to passengers during the hours when meals are not being served. The puzzles, when properly assembled, are found to be an elaborate and colorful cartoon map of the Katy system and the territory which it serves.

New Beslers in Transportation

That the interest of Beslers in transportation continues unabated in a third generation is indicated in reports from Oakland, Cal., where the first successful flight in the history of aviation by a high-pressure steam-propelled motor was recently accomplished by William J. and George D. Besler, sons of W. G. Besler, chairman of the board of the Central of New Jersey. The Besler brothers developed the high-pressure steam motor which was used and which, it is stated, had previously been used successfully in automobiles and rail cars. A feature of the motor is its silent operation since, the report of the flight stated, William Besler could be heard plainly as he spoke to the crowd from an altitude of about 100 ft.

Railroaders Made Kentucky Colonels

Two of the leaders in the railway employees' associations for securing legislation to equalize regulation and taxation between the railways and competing forms of transport, have been commissioned as Kentucky colonels by Lieutenant-Governor Albert B. Chandler. One is George L. Phillips, of Louisville, treasurer of the Kentucky Railroad Employees and Citizens League, and the other is Albert T. Pierson, chairman of the Connecticut Railroad Employees and Taxpayers Association, New Haven. Col. Phillips is a locomotive fireman on the Kentucky & Indiana Terminal and Col. Pierson is a traveling auditor on the New Haven. Kentucky colonelcies, it is understood, are awarded quite as frequently for political prowess as for bravery in mortal combat.

No Competition for This Shipment

Railroad transportation had the field to itself when the time came to transport material for one of the gates to be used to seal the diversion tunnels after the Hoover Dam has been completed. Truck lines eager to take care of the movement were conspicuous by their absence. The reason was that each gate consists of 19 girders weighing 35 tons apiece, 38-ton vertical girders for each side, and a large number of steel plates 1½ in. thick. The rivets used to fasten together the various parts of the gate weigh more than the average yard locomotive. The completed gates will weigh 3,000,000 lb. each, will be 55 ft. square and 12 ft. thick, and will contain more steel than is used in erecting a 12-story office building. This explains why the Union Pacific used a train of 40 gondola and flat cars "just to move a gate."

Railroad Unemployment Relieved

Four hundred railroad men in Los Angeles, Cal., went back to "work" the other day as the result of an ambitious production policy by Fox Films. The men, including locomotive engineers, machinists and shop hands—more than 100 of whom had been out of work for months—were hired to man the Union Pacific shops, which served as a location for the filming of a new moving picture, "The Power and the Glory." Each man was paid his union wage in the pursuit, by Director William K. Howard, of authenticity and business-like activity in the U. P. shops. The railroad men, made "extras" for the occasion, were obtained through the agency of the Union Pacific. Each man was assigned a duty by regular shop foremen. Many of the 100 or so who hadn't worked in months, it is needless to say, were more than glad to get the money paid them by the movie company. After first "shooting" a scene of the shops in full operation, Howard directed a vivid strike scene, utilizing his "extras" and the cast of principals headed by Spencer Tracy and Colleen Moore.

Way-Back Pay

The statute of limitations was not invoked when John Martin, former Pullman porter, recently appeared to ask for pay due him for a trip made in June, 1911. Taken ill while on his run from Ogden, Utah, to Denver, Colo, he had secured a substitute porter to take care of his car. He then forgot to do anything more about the matter, not even officially terminating his employment with the company. When the request for the back pay was received, the auditing department records were examined. These showing that a balance of $5.83 was due him, a voucher for this amount was issued.

An Old-Time Mileage Ticket

A 1,000-mile mileage ticket, issued by G. G. Sanborn, general ticket agent of the Northern Pacific, to C. W. and C. G. Mixer on July 9, 1879, was recently forwarded to the Veterans' Bureau of the railway by Charles W. Mixer, manufacturer, of Hastings, Mich. Mr. Mixer had retained the 54 year old ticket among various papers of historical interest. It was used in the year when the Northern Pacific was building its bridge across the Missouri river at Bismarck, N. D. The ticket is quite different from the type of mileage ticket now sold by the western railways. It is merely a card, around the edge of which are squares containing the numerals 1, 2, 3, 4, 5, 10 and 15. These were punched out to the number making up the aggregate of the mileage traveled on each trip. The variety of the punch mark indicates that many different conductors honored the ticket back in 1879. The ticket was issued four years before the Northern Pacific became a transcontinental line, following the driving of the gold spike at Gold Creek, Mont., on September 8, 1883, connecting the lines from the East and the West. This souvenir is one of many which are being received by the railway company in the semi-centennial year of the completion of its transcontinental line.

Race Horse Traffic

The Great Western Railway in Great Britain claims the distinction of carrying more race horses annually than any other railway. This year it is expected that between 12,000 and 14,000 of the fast-stepping equines will be conveyed by the Great Western to and from race meetings throughout the country and between various training centers on the system. For the Lincoln meeting alone, which began on March 20, more than 170 horses were conveyed by special train or by ordinary passenger train services. For these high-strung animals, rail travel has proved to be the least tiring form of transportation, and so little are the horses affected by their train journey that they are fit to race shortly after unloading. The Great Western takes great pains in the conveyance of race horses and tries to get them to the races and back home again in one day. For the convenience of trainers, the railway issues a special timetable for each race meeting so that the time of loading at the home station and the time when the horses will be back from the races are known in advance. Arrangements are also made to run special trains for the staff of the "totalisators" in connection with the larger race meetings. These trains carry as many as 120 persons and the necessary calculating machines, and are timed to reach the course about two hours before the first race on the first day of the meeting.

NEWS

With Less Traffic I. W. C. Makes a Better Showing

Revised accounting methods together with reduced costs produce more favorable statement

By bookkeeping changes and reductions in operating expenses for transportation the Inland Waterways Corporation in the calendar year 1932 was able to show, in spite of decreased freight revenues, not only an increase in net income as compared with the year before but also a credit balance in its profit and loss account covering the entire period of its operations since 1924. Heretofore the corporation has always shown a net corporate deficit, which in the annual report for 1931 was stated as $276,421, after accounting for losses of $712,766 assumed on property and equipment retired from service on the basis of an appraisal of the property made at the time the corporation took it over, but in the annual report just made public for 1932 this is readjusted to show a credit balance at the beginning of the year of $150,554 and with the net income for 1932 of $470,140 and other items a credit balance of $617,031 was carried to the balance sheet at the end of the year. On this basis the report claims at "net profit" for the period of its operations of $639,906.

The readjustments in accounting methods, according to the report, were made after conference with Alexander Wylie, director of the Bureau of Accounts of the Interstate Commerce Commission, who addressed an informal letter to the corporation upon request stating that he understood that the liability accounts for certain equipment transferred to the corporation when it began business had been overstated and that the necessary adjustment should now be made through profit and loss. Director Wylie's letter also stated that if the expenditures of the Washington office, amounting to $454,000 from June 1, 1924, to September 30, 1932, had been for the benefit both of the capital account and operations, a charge should be made to the investment account to cover an equitable proportion of the total expenses, leaving the remainder only as a charge to current operation accounts. In prior years none of the Washington expenses had been included in the operating accounts but the report says that the adjustments were made in the 1932 report in accordance with Mr. Wylie's letter, which General Ashburn refers to as an authorization by the commission.

The total tonnage forwarded and delivered during the year was 1,572,869, as compared with 1,481,751 in 1931, but because of lower rates the freight revenue for the year was only $5,853,401 as compared with $5,995,466 in 1931. Operating expenses were $5,607,365, as compared with $5,965,739 in 1931 and transportation expenses took only $3,291,233 as compared with $3,757,086 in 1931. Maintenance, traffic, and general expenses were greater in 1932 than in 1931. The net income of $470,140 represents a return of about 1.91 per cent on the corporation's stated investment and was earned entirely on the lower Mississippi river division. Although details are not given for the separate divisions a report of the operating manager of the Warrior river division which is included states that "we should wind up the year a little over $100,000 in the red." The lower Mississippi river division showed a drop of 8.8 per cent in tonnage as compared with 1928 but an increase of 10.3 per cent over 1931. The tonnage of the upper river division showed an increase of 28 per cent over 1931.

General Ashburn, in his part of the report, advocated an amendment of the long-and-short-haul clause of the interstate commerce act to omit the discretionary power given the Interstate Commerce Commission to authorize the charging of a less rate for a long haul than for a short haul and a prohibition against blanketing of rates. He also urged the establishment of joint truck-water rates, subject to the jurisdiction of the Interstate Commerce Commission.

Thirty Cent Breakfast on the Katy

Breakfasts ranging from 30 cents to 75 cents, in addition to a la carte service, are now available on dining-cars on the Missouri-Kansas-Texas. The new schedule of prices succeeds those which ranged from 60 to 85 cents and became instantly popular. T. T. Turner, superintendent of dining service, says the change is daily increasing dining car revenues without appreciably affecting the number of table d'hote and a la carte meals.

Express Rate on Gold Reduced to Meet Water Competition

The Interstate Commerce Commission has recently authorized the Railway Express Agency to publish a reduced rate on shipments of gold coin or bullion between Seattle or San Francisco and New York in an effort to take some of the shipments moving from China to London from the all-water route by the Suez canal. The new rate is $2.50 per $1000 as compared with the former rates of $3.60 from San Francisco and $3.25 from Seattle.

Roosevelt Rail Message Encounters New Delay

Program was nevertheless expected to be before Congress by end of this week

President Roosevelt's anticipated message to Congress outlining a plan of temporary railroad legislation, including the proposal for the creation of a federal railroad co-ordinator, was not ready in the early part of the week as had been expected but was supposed to go to the Capitol before the end of the week, it was stated at the White House on Wednesday. The final draft of the bill to carry the plan into effect was understood to have been submitted to the President on Tuesday by Secretary Roper of the Department of Commerce, after final touches had been placed on it in conferences attended by Secretary Roper, Secretary Woodin of the Treasury, Commissioner Eastman, and Dr. W. M. W. Splawn, but the House was not in session Wednesday. The plan is also expected to include the two Rayburn bills on which hearings have already been held, including the Section 15a bill, and an amendment to the act providing for loans from the Reconstruction Finance Corporation, whether or not they are included in the same bill with the co-ordinator plan, and it has been officially stated that the legislation now proposed is regarded as only of a temporary emergency character to enable the railroads to effect some economies and allow more time for further study of more permanent legislation after January 1. This is taken to mean that regulation of motor transport and water carriers will not be undertaken at this session. It has been generally reported that Commissioner Eastman would be appointed co-ordinator, and no other names have been suggested recently, although there has been no confirmation. It is expected that the co-ordinator would work in co-operation with regional committees set up by the railroads.

Side by side with the plan for bringing about greater co-ordination among the railroads there is, or has been, under consideration another plan for un-coordinating the Interstate Commerce Commission by executive order of the President. The commission's organization and others interested in regulatory problems have been agitated during the past week by a circumstantial but unconfirmed report that the plan for a reorganization of the Department of Commerce submitted by Secretary Roper to the President for his approval provides for the amputation of the Bureau of Valuation,

(Continued on page 609)

N. J. Merger of Reading and P. R. R. Approved

Public Utility Board of that state recommends favorable action by the I. C. C.

The Board of Public Utility Commissioners of New Jersey, in a report dated April 11, has recommended favorable action by the Interstate Commerce Commission on the application of the Pennsylvania and the Reading for authority to unify the facilities of their respective subsidiaries—the West Jersey & Seashore and the Atlantic City—located in the southern part of New Jersey. While it suggests certain stipulations in connection with two features of the proposed unification, the New Jersey commission finds in general that the plan "will tend to effect economies in cost of operation; prevent further substantial financial loss to the respective railroad companies because of duplication of service; eliminate grade crossings and thereby avoid substantial expense to the state and the railroad companies, and generally to produce many other benefits without depriving the passenger and freight traffic of reasonable transportation facilities."

The report quotes an estimated annual saving of $1,600,000 which is expected to result from the unification and suggests that "on the basis of the combined net revenue of 1932, with this amount, sufficient revenue would be available to meet the operating, administrative and financial expenses." Exhibits attached to the report reveal that in 1932 combined gross revenues of the West Jersey & Seashore and the Atlantic City were 65.23 per cent less than in 1923; combined operating expenses were 61.53 per cent less and combined net revenues 87.26 per cent less.

The New Jersey investigation was conducted at the request of the I. C. C. with which body the Pennsylvania, the Reading, the West Jersey & Seashore and the Atlantic City had filed applications for authority "to unify the rail facilities between Camden and Atlantic City, Ocean City, Wildwood, Cape May and other terminals." The plan now awaits final action by the I. C. C.

In its introductory remarks the New Jersey board notes that "the unification of rail facilities in South Jersey has been frequently the subject of discussion" and cites the investigation into the possibilities of such unification which it conducted in 1931 at the direction of the New Jersey legislature.

The unification plan proposes, for the Camden-Atlantic route, the use of the lines of both railroads between Camden and Winslow Junction, where they serve different territories, the elimination of the line of the Atlantic City between Winslow Junction and "Penred" tower, located in Atlantic City, and the retention of the West Jersey & Seashore line for the remainder of the route to the Atlantic City terminus. The stations of the two roads in Atlantic City would be combined and, the report says, "a new station necessarily will have to be erected." The principal municipality affected by this change would be Pleasantville, located about 5.6 miles north of Atlantic City. Proposed arrangements for handling Pleasantville traffic, the report says, should be required by any order approving the plan.

Other features of the plan involve the elimination of the tracks of the West Jersey & Seashore between a point 2.5 miles east of Woodbine Junction and Cape May, including the major part of its Ocean City branch, and its Stone Harbor and Wildwood branches. The main trackage of the Atlantic City lines south of Winslow Junction on the Cape May division, the Ocean City branch, the Wildwood & Delaware Bay Short Line and the Stone Harbor branch would be retained. The second stipulation the New Jersey board makes would require, while the adequacy of other arrangements was being determined, the maintenance of tracks between Avalon and Stone Harbor and the branch line between Wildwood Junction and Wildwood. At several points motor bus services would be substituted for train services and stations served by bus would be shown on railway schedules with train connections.

Financial arrangements for the unification propose that the Pennsylvania own two-thirds and the Reading one-third of the stock of the company which would operate the unified properties.

Former Vice-President Admitted to Practice Before I. C. C.

Former Vice-President Charles Curtis has been admitted to practice before the Interstate Commerce Commission.

I.C.C. Investigates Refusal of States to Apply Surcharge

The Interstate Commerce Commission has issued orders instituting investigations of the refusal of the state authorities of North and South Carolina, Alabama, and Georgia to permit the emergency freight rate surcharges to be continued after March 31 on intrastate traffic, after the federal commission had authorized the continuance for interstate traffic.

"Select-Your-Price" Meals

The Chicago & North Western will revise its meal prices on April 15 by introducing "select-your-price" meals. These will be available on every dining car on the road, at prices ranging from 75 cents to $1.25, which latter is the standard price of the table d'hote meal heretofore served on these cars. "Select-your-price" meals supplement club breakfasts, which range from 50 cents to 90 cents, club luncheons at $1 and a la carte service.

S. P. and W. P. One-Way Coach Rate

The Southern Pacific and the Western Pacific will place in effect an experimental one-way coach rate of $12 between San Francisco, Cal., and Salt Lake City, Utah, and Ogden, during the period from April 25 to June 30 to determine whether low rates will attract passengers. The rate, which is less than half of the regular fare of $28.05, will apply locally and will not be considered a basic rate to be applied to through business. The low rate will also apply to intermediate points in Nevada.

Motor Truck Regulatory Law Enacted in Maine

Control over common carriers and contract operators provided in recent legislation

Regulation of common carrier and contract trucks, including control over rates and hours of service of drivers, is provided in Maine's recently-enacted motor carrier law which also requires interstate trucking companies to obtain permits for operations on routes which extend into that state. Several types of motor truck operations are exempted from the provisions of the law as follows: (1) Motor vehicles operating exclusively within the limits of a single city or incorporated town or within 15 miles of the limits thereof; (2) motor vehicles while engaged exclusively in the work of any branch of government; (3) motor vehicles while engaged exclusively in the delivery of United States mail. Also, trucks transporting the property of their owners are exempted and motor carriers "when carrying property to warehouses, railroads or boats for re-shipment by rail or vessel, and when carrying logs, wood or lumber to mills for manufacture" are not to be subjected to rate regulation for such service.

Section 1 of the act is the declaration of policy which stipulates that regulatory measures are required in order that "the highways may be rendered safer for the use of the general public" and also that "the various transportation agencies of the state may be adjusted and correlated so that public highways may serve the best interest of the general public."

Under Section 2 common carrier trucks are required to secure certificates of convenience and necessity, in the granting of which the public utilities commission is directed to "take into consideration the existing transportation facilities and the effect upon them. . . . . the effect upon the highways involved and the safety of the public using such highways," Operators who have lawfully conducted uninterrupted service on any route since March 1, 1932, will receive certificates as a matter of right; if more than one so qualify, and the route is deemed to have a surplus of transport facilities, preference is to be given those engaged longest in providing the service.

The commission's jurisdiction over the rates of common carriers extends to the power, after notice and hearing, "to allow or disallow, alter or prescribe such rates." The rate schedules, it is stipulated, must be filed with the commission and departures from rates thus published are forbidden as are rebates.

Contract carriers are brought under the law's provisions because control over such operators is required for "the preservation and maintenance of the highways and the proper regulation of common carriers using such highways." Contract carriers are therefore forbidden to operate without permits and no permit, the law says, shall be granted by the commission if the latter "shall be of the opinion that the proposed operation of any such contract carrier will

impair the efficient public service of any authorized common carrier or common carriers then adequately serving the same territory." As in the case of common carriers, so also will contract carriers in bona fide operation continuously since March 1, 1932, be given permits as a matter of right. In connection with rates it is made the duty of the commission to "prescribe minimum rates and charges to be collected by contract carriers which shall not be less than the rates charged by common carriers for substantially the same or similar service."

Permits to interstate operators are, under the law, issued as a matter of right upon compliance by applicants with regulations for such and payment of fees, "unless the commission shall find that the condition of the highways to be used is such that the operation proposed would be unsafe, or the safety of other users thereof would be endangered thereby." All interstate operators making two or more trips into Maine in any 30-day period are brought under this section.

Each applicant for a certificate or permit, including interstate operators, is required to pay a filing fee of $15 which, it is stipulated, "is not for revenue purposes, but is to be used by the commission for the purpose of defraying the expenses of administering this act, and any portion of such fees not used or required for such

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States *

Compiled from the Monthly Reports of Revenues and Expenses for 150 Steam Railways

FOR THE MONTH OF FEBRUARY, 1933 AND 1932

Item	United States		Eastern District		Southern District		Western District	
	1933	1932	1933	1932	1933	1932	1933	1932
Average number of miles operated	240,707.22	240,981.97	58,924.49	59,080.24	45,885.00	46,104.76	135,897.73	135,796.97
Revenues:								
Freight	$168,790,270	$204,739,386	$73,975,461	$90,222,108	$37,485,604	$40,903,009	$57,329,205	$73,614,269
Passenger	23,584,978	33,827,172	14,010,978	19,889,584	3,359,229	4,405,065	6,214,771	9,532,523
Mail	7,150,738	7,903,319	2,760,432	3,061,096	1,240,823	1,337,393	3,149,483	3,504,830
Express	2,440,137	4,409,785	1,127,637	1,930,208	643,829	945,658	668,671	1,533,919
All other transportation	5,299,394	6,720,480	3,025,583	3,842,678	483,511	571,558	1,790,300	2,306,244
Incidental	3,926,723	5,420,024	2,300,957	3,159,760	576,830	738,139	1,048,936	1,522,125
Joint facility—Cr.	613,290	745,167	193,878	227,044	122,094	133,710	297,318	384,413
Joint facility—Dr.	192,626	245,533	48,041	65,317	18,917	19,293	125,668	160,923
Railway operating revenues	211,612,904	263,519,800	97,346,885	122,267,161	43,893,003	49,015,239	70,373,016	92,237,400
Expenses:								
Maintenance of way and structures	21,596,179	28,465,875	8,598,438	12,337,261	4,871,255	6,093,005	8,126,486	10,035,609
Maintenance of equipment	44,861,471	54,473,458	19,855,591	24,400,380	8,600,930	10,145,972	16,404,950	19,927,106
Traffic	6,952,646	8,439,998	2,635,131	3,262,516	1,310,283	1,584,937	3,007,232	3,592,545
Transportation	84,048,317	101,058,542	38,951,355	47,586,742	14,346,372	16,551,330	30,750,590	36,920,470
Miscellaneous operations	1,761,209	2,550,769	894,240	1,270,731	236,061	338,947	630,908	941,091
General	11,910,931	13,430,874	5,133,325	5,907,255	2,024,059	2,349,564	4,753,547	5,174,055
Transportation for investment—Cr.	267,038	252,993	138,093	94,639	38,313	36,578	90,632	121,776
Railway operating expenses	170,863,715	208,166,523	75,929,987	94,670,246	31,350,647	37,027,177	63,583,081	76,469,100
Net revenue from railway operations	40,749,189	55,353,277	21,416,898	27,596,915	12,542,356	11,988,062	6,789,935	15,768,300
Railway tax accruals	21,726,780	24,082,711	8,686,594	9,553,482	4,302,083	4,669,323	8,738,103	9,859,906
Uncollectible railway revenues	54,950	57,885	18,748	14,884	9,416	8,461	26,786	34,540
Railway operating income	18,967,459	31,212,681	12,711,556	18,028,549	8,230,857	7,310,278	*d 1,974,954*	5,873,854
Equipment rents—Dr. balance	6,400,499	6,864,170	3,360,550	3,582,613	453,418	450,972	2,586,531	2,830,585
Joint facility rent—Dr. balance	2,712,076	2,693,177	1,306,772	1,343,812	294,953	281,666	1,110,351	1,067,699
Net railway operating income	9,854,884	21,655,334	8,044,234	13,102,124	7,482,486	6,577,640	*d 5,671,836*	1,975,570
Ratio of expenses to revenues (per cent)	80.74	78.99	78.00	77.43	71.43	75.54	90.35	82.90

FOR TWO MONTHS ENDED WITH FEBRUARY, 1933 AND 1932

Average number of miles operated	240,717.95	241,012.52	58,924.33	59,077.96	45,885.00	46,114.91	135,908.62	135,819.65
Revenues:								
Freight	$347,597,975	$412,497,432	$151,399,949	$181,245,911	$76,947,298	$82,387,090	$119,250,728	$148,864,431
Passenger	50,195,468	71,780,303	30,112,279	42,165,800	6,755,957	9,156,357	13,327,232	20,458,146
Mail	14,857,343	16,226,584	5,737,519	6,301,284	2,572,964	2,774,842	6,546,860	7,150,458
Express	4,691,902	8,173,912	1,960,181	3,542,591	1,211,901	1,732,792	1,519,820	2,898,529
All other transportation	10,888,796	13,566,046	6,266,962	7,753,000	984,219	1,127,289	3,637,615	4,685,757
Incidental	8,501,147	11,559,588	4,950,514	6,726,744	1,256,542	1,584,778	2,294,091	3,248,066
Joint facility—Cr.	1,292,355	1,557,840	402,474	472,405	254,267	266,970	635,614	818,465
Joint facility—Dr.	391,785	479,958	104,201	130,391	39,124	38,637	248,460	310,930
Railway operating revenues	437,633,201	534,881,747	200,725,677	248,077,344	89,944,024	98,991,481	146,963,500	187,812,922
Expenses:								
Maintenance of way and structures	44,206,972	58,378,892	17,891,379	25,257,185	9,875,907	12,806,509	16,439,686	20,315,198
Maintenance of equipment	92,317,863	111,953,329	40,656,571	50,330,331	17,961,292	20,790,609	33,700,000	40,832,389
Traffic	14,227,390	17,231,657	5,283,307	6,562,944	2,747,252	3,310,828	6,196,831	7,357,885
Transportation	173,553,349	214,280,217	80,421,929	100,479,654	29,554,886	35,276,088	63,576,534	78,524,475
Miscellaneous operations	3,767,947	5,430,052	1,900,081	2,706,858	488,371	729,321	1,379,495	1,993,873
General	24,435,986	27,871,052	10,513,203	12,236,631	4,156,198	4,831,415	9,766,585	10,803,006
Transportation for investment—Cr.	470,421	562,457	186,088	185,784	72,781	54,480	211,552	322,193
Railway operating expenses	352,039,086	434,582,742	156,480,382	197,387,819	64,711,125	77,690,290	130,847,579	159,504,633
Net revenue from railway operations	85,594,115	100,299,005	44,245,295	50,689,525	25,232,899	21,301,191	16,115,921	28,308,289
Railway tax accruals	43,746,267	47,974,080	17,588,369	19,016,804	8,591,530	9,289,629	17,566,368	19,667,647
Uncollectible railway revenues	145,397	135,081	52,297	44,800	17,073	19,383	76,027	70,898
Railway operating income	41,702,451	52,189,844	26,604,629	31,627,921	16,624,296	11,992,179	*d 1,526,474*	8,569,744
Equipment rents—Dr. balance	12,982,172	13,800,841	6,790,165	7,151,777	861,714	926,464	5,330,293	5,722,600
Joint facility rent—Dr. balance	5,509,081	5,522,261	2,783,487	2,859,623	630,698	559,878	2,094,896	2,102,760
Net railway operating income	23,211,198	32,866,742	17,030,977	21,616,521	15,131,884	10,505,837	*d 8,951,663*	744,384
Ratio of expenses to revenues (per cent)	80.44	81.25	77.96	79.57	71.95	78.48	89.03	84.93

* Excludes switching and terminal companies. Statements prior to January, 1933, included switching and terminal companies. *d* Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Continued on second left-hand page

Operating Statistics of Large Steam Railways—Selected Items for the Month of February, 1933,

Region, road, and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross. Excluding locomotives and tenders	Ton-miles (thousands): Net. Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany....1933	402	100,319	104,174	7,010	2,486	68.0	126,133	41,693	59	52	46.6	18
1932	402	127,133	131,775	8,577	3,238	65.5	168,647	55,453	71	64	47.2	17
Boston & Maine....1933	2,057	217,637	245,014	20,753	6,682	67.3	364,348	130,777	125	163	56.4	22
1932	2,063	266,243	301,603	28,341	8,212	67.9	440,438	159,711	156	134	46.1	32
N. Y., New H. & Hartf....1933	2,048	276,637	336,484	14,439	8,426	65.5	453,111	163,015	222	132	37.2	40
1932	2,055	324,119	392,939	23,411	10,374	63.8	562,232	200,178	224	118	34.5	21
Great Lakes Region:												
Delaware & Hudson....1933	848	173,784	228,136	24,270	5,099	59.5	328,234	146,915	251	30	10.9	159
1932	848	203,243	265,903	28,409	6,221	59.7	396,759	178,395	246	27	10.1	144
Del., Lack. & Western....1933	998	291,706	322,697	39,597	8,604	63.7	504,804	193,853	206	59	22.1	62
1932	998	319,234	350,342	40,118	10,186	65.3	587,241	231,514	209	58	21.8	49
Erie (incl. Chi. & Erie)....1933	2,316	540,088	561,270	39,776	20,311	60.6	1,285,386	490,126	304	188	38.3	95
1932	2,316	574,613	600,950	51,264	24,069	62.2	1,447,647	550,658	353	134	27.6	129
Grand Trunk Western....1933	1,003	175,791	177,856	1,445	4,123	58.7	252,527	84,957	82	68	45.4	17
1932	1,021	187,594	189,183	1,578	4,505	60.6	268,708	93,360	102	47	31.5	36
Lehigh Valley 1933	1,341	318,892	332,992	29,282	9,281	64.0	561,777	225,046	167	151	47.4	17
1932	1,343	356,818	373,599	36,785	10,604	63.5	639,007	257,210	220	125	36.4	47
Michigan Central 1933	1,965	321,730	322,014	9,576	9,401	58.4	568,040	183,549	125	81	39.3	34
1932	2,115	359,809	360,257	8,363	10,626	59.5	620,062	200,457	134	89	40.0	41
New York Central....1933	6,320	1,168,635	1,258,471	80,687	41,307	59.0	2,632,539	1,058,267	568	605	51.6	57
1932	6,329	1,356,547	1,456,062	88,477	48,795	59.8	3,018,351	1,193,167	691	578	45.5	139
New York, Chi. & St. L....1933	1,661	400,825	410,485	4,953	11,546	60.9	683,222	238,308	122	114	48.4	24
1932	1,660	423,730	436,413	4,870	12,797	60.3	751,589	256,415	166	82	33.0	56
Pere Marquette 1933	2,286	287,519	297,890	2,460	6,212	57.1	420,740	162,045	124	49	28.2	20
1932	2,243	281,862	290,670	2,626	6,560	59.2	420,230	161,597	142	33	18.9	40
Pitts. & Lake Erie....1933	236	43,208	44,842	891	1,702	58.3	140,009	76,469	23	48	67.3	5
1932	235	48,336	49,516	721	2,017	57.7	162,608	88,862	53	31	36.7	31
Wabash 1933	2,453	445,860	454,417	8,520	12,249	61.7	716,975	237,213	193	158	45.1	28
1932	2,497	494,467	505,988	10,446	14,327	61.8	830,512	272,804	248	134	35.0	49
Central Eastern Region:												
Baltimore & Ohio....1933	6,283	1,060,738	1,280,142	130,570	29,161	58.8	1,988,991	858,995	769	582	43.1	222
1932	6,277	1,213,797	1,388,293	139,695	34,012	59.2	2,281,481	988,281	914	448	32.9	286
Big Four Lines....1933	2,787	558,239	584,359	16,849	15,387	59.5	1,049,509	482,476	269	178	39.8	1
1932	2,790	565,605	587,532	16,037	16,480	59.7	1,084,638	486,747	227	220	49.2	23
Central of New Jersey....1933	692	125,473	135,954	19,644	3,734	56.0	269,041	128,697	115	63	35.3	58
1932	692	149,683	161,311	21,256	4,307	55.6	300,012	135,076	119	59	33.2	46
Chicago & Eastern Ill....1933	939	165,595	166,227	3,686	3,189	61.4	219,798	98,814	66	97	59.7	22
1932	939	164,759	164,759	2,165	3,615	62.2	235,846	102,715	92	69	43.0	45
Elgin, Joliet & Eastern....1933	447	64,508	65,502	1,203	1,324	57.1	107,416	52,200	77	13	14.2	31
1932	447	70,737	73,337	2,724	1,675	56.4	135,731	66,475	83	7	7.8	28
Long Island 1933	396	25,609	26,525	12,112	274	52.2	21,120	8,554	33	13	28.0	5
1932	400	35,679	37,000	13,017	363	54.4	26,668	10,539	41	5	10.4	10
Pennsylvania System 1933	10,532	2,197,860	2,443,189	237,707	69,005	60.3	4,639,914	2,013,078	1,749	753	30.1	725
1932	10,544	2,512,027	2,829,954	276,534	82,188	61.0	5,443,622	2,334,402	2,192	356	14.0	989
Reading 1933	1,454	357,729	384,186	39,554	8,672	56.5	658,904	308,082	299	91	23.5	125
1932	1,451	402,143	432,123	42,578	10,790	58.4	775,570	363,772	316	97	23.5	98
Pocahontas Region:												
Chesapeake & Ohio....1933	3,136	707,158	743,330	26,074	27,572	54.2	2,360,021	1,260,188	541	149	21.6	237
1932	3,136	714,882	753,298	28,939	27,453	55.5	2,289,110	1,220,246	556	101	15.4	246
Norfolk & Western....1933	2,223	493,568	516,131	23,954	17,898	59.7	1,471,864	777,970	415	65	13.6	188
1932	2,258	514,983	539,642	24,381	18,155	59.1	1,473,347	754,650	443	43	8.8	201
Southern Region:												
Atlantic Coast Line....1933	5,144	522,977	523,907	6,985	10,214	59.8	542,625	167,616	358	133	27.0	107
1932	5,144	589,308	592,441	8,797	12,073	58.0	668,410	212,070	380	92	19.5	98
Central of Georgia....1933	1,900	167,165	167,856	2,632	3,337	68.5	180,719	65,704	85	56	40.0	...
1932	1,900	177,224	179,318	2,675	3,981	68.3	210,860	75,519	100	45	31.2	3
Ill. Cent. (incl. Y. & M. V.)1933	6,658	1,165,362	1,176,650	21,350	25,516	59.2	1,744,572	727,715	636	302	32.2	32
1932	6,670	1,179,746	1,188,568	19,350	27,871	60.0	1,881,437	743,713	740	183	19.9	61
Louisville & Nashville....1933	5,166	824,679	881,866	24,841	16,883	56.6	1,214,993	567,445	369	330	47.2	67
1932	5,262	851,461	901,790	24,361	17,593	58.7	1,210,482	556,851	474	230	32.7	162
Seaboard Air Line....1933	4,373	431,236	443,897	3,836	9,835	58.1	602,700	190,230	239	51	17.6	37
1932	4,437	477,885	486,317	5,768	10,891	60.0	638,953	200,306	259	32	11.0	35
Southern 1933	6,602	924,972	934,837	16,265	20,157	65.8	1,105,026	410,436	743	170	18.6	248
1932	6,669	1,003,411	1,013,595	16,830	22,751	66.5	1,216,244	441,245	753	182	19.5	264
Northwestern Region:												
Chi. & North Western....1933	8,443	761,402	800,866	19,668	16,986	62.6	1,020,235	331,225	592	234	28.3	214
1932	8,443	945,134	971,862	20,426	21,319	58.5	1,333,650	448,369	657	153	18.9	207
Chicago Great Western....1933	1,463	178,462	179,345	13,881	4,694	58.5	295,650	104,768	61	39	39.2	1
1932	1,459	192,982	194,051	11,744	6,058	59.6	374,729	133,635	65	49	42.9	2
Chi., Milw., St. P. & Pac...1933	11,234	954,522	1,017,913	52,509	22,121	61.3	1,413,654	577,995	735	172	18.9	361
1932	11,265	1,130,007	1,200,102	68,706	27,204	59.3	1,749,403	691,953	762	152	16.6	360
Chi., St. P., Minn. & Om..1933	1,714	180,625	188,185	10,406	3,300	64.7	203,088	80,905	136	32	19.0	71
1932	1,714	209,496	222,784	11,049	3,818	62.6	229,670	91,824	142	30	17.2	64
Great Northern 1933	8,426	517,365	521,099	14,626	12,688	65.2	782,940	322,096	470	124	20.9	168
1932	8,311	538,332	542,665	15,853	13,733	65.2	834,582	341,060	470	141	23.1	149
Minneap., St. P. & S. St. M. 1933	4,314	292,269	296,043	1,319	4,890	64.0	280,738	112,275	133	36	21.3	13
1932	4,325	321,714	327,477	3,521	6,444	63.6	362,769	143,161	144	56	28.1	17
Northern Pacific 1933	6,404	405,413	427,689	24,488	9,826	68.8	573,598	237,523	378	141	27.1	99
1932	6,397	482,812	509,602	28,555	12,703	68.2	729,685	300,626	404	117	22.4	109
Oreg.-Wash. R. R. & Nav..1933	2,179	110,317	115,116	7,323	2,499	69.3	139,942	54,268	78	40	33.8	28
1932	2,219	142,777	149,044	10,250	3,193	68.5	189,676	80,098	102	23	18.3	41
Central Western Region:												
Alton 1933	952	160,368	161,004	1,153	3,050	58.0	197,865	68,990	56	46	44.9	8
1932	989	184,716	185,950	1,316	3,717	58.7	238,961	84,086	88	23	20.5	34
Atch., Top. & S. Fe (incl. P. & S. F.)....1933	11,612	1,059,158	1,116,088	39,954	25,884	63.1	1,545,466	520,802	658	275	29.5	282
1932	11,599	1,174,664	1,248,105	47,393	31,938	63.8	1,916,621	680,834	711	216	23.3	299
Chi., Burl. & Quincy....1933	9,157	921,986	952,060	26,328	20,984	58.7	1,293,764	525,867	467	126	21.3	60
1932	9,217	1,002,076	1,034,156	32,229	27,100	58.3	1,675,726	726,814	501	114	18.5	65
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)...1932	8,333	865,704	885,742	6,165	17,666	57.7	1,101,963	381,456	465	148	24.1	129
	8,342	999,109	1,022,999	4,630	22,391	58.3	1,376,848	486,373	534	139	20.6	142
Denver & R. G. Wn....1933	2,514	141,481	157,286	18,546	3,571	64.1	215,710	88,678	188	46	19.7	60
1932	2,557	161,600	180,464	23,262	4,316	61.5	273,329	113,805	207	36	14.8	54
Los Angeles & Salt Lake...1933	1,240	120,546	134,628	17,034	3,397	65.5	191,601	67,338	74	29	28.4	13
1932	1,240	155,704	171,867	18,764	4,542	66.3	253,342	90,313	90	17	15.5	24
Oregon Short Line....1933	2,491	202,603	217,352	16,507	4,668	63.6	288,365	111,902	127	45	25.9	52
1932	2,481	215,493	224,164	13,211	5,734	65.4	352,538	145,506	148	10	6.4	68
Southern Pacific—Pacific Lines 1933	8,878	758,788	802,058	71,468	21,209	63.0	1,276,734	401,815	512	371	42.1	219
1932	8,922	928,209	988,747	93,531	25,968	62.5	1,573,310	511,025	573	337	37.0	211
Union Pacific 1933	3,767	591,071	603,208	22,740	17,445	64.5	1,014,678	364,133	378	98	20.5	203
1932	3,768	659,225	673,850	25,699	21,890	65.1	1,252,916	460,968	400	63	13.5	181
Southwestern Region:												
Gulf, Colo. & S. Fe....1933	1,943	156,997	158,086	2,475	3,428	61.6	213,385	83,527	88	33	27.2	27
1932	1,943	175,987	179,339	3,324	4,710	63.4	293,597	123,397	101	25	19.8	38
Mo.-Kans.-Texas Lines 1933	3,282	313,470	315,739	4,220	7,074	60.3	419,061	143,473	154	76	32.9	75
1932	3,282	310,406	311,661	4,481	7,784	60.5	458,587	159,532	164	59	26.3	85
Missouri Pacific 1933	7,385	924,015	955,204	22,312	22,318	60.2	1,399,499	518,831	433	157	26.7	158
1932	7,409	1,041,837	1,057,822	28,310	26,135	59.6	1,660,105	592,120	487	97	16.6	195
St. Louis-San Francisco....1933	5,193	527,877	531,122	5,488	10,422	60.5	654,550	257,197	393	84	17.6	159
1932	5,193	533,476	536,412	5,664	11,574	61.1	702,457	264,325	410	82	16.7	149
St. Louis Southwestern Lines 1933	1,902	176,402	185,625	2,694	4,198	62.4	239,447	75,112	107	25	18.6	33
1932	1,902	179,335	183,643	2,396	4,341	58.3	258,247	76,066	113	29	20.2	42
Texas & New Orleans....1933	4,568	400,319	401,068	5,616	8,271	64.1	477,841	154,911	218	93	30.0	42
1932	4,611	442,892	443,595	1,101	9,225	63.0	542,620	183,479	241	93	27.7	62
Texas & Pacific....1933	1,946	209,372	209,372	1,109	5,910	59.5	364,038	115,486	186	61	24.8	92
1932	1,946	236,756	236,756	1,823	6,072	58.5	374,077	111,525	175	72	29.0	59

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Compared with February, 1932, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany 1933	4,676	2,868	7,544	36.2	20,570	1,257	416	16.8	197	17.3	3,706	173	35.9
1932	4,091	2,858	6,949	22.8	21,219	1,327	436	17.1	275	24.5	4,760	169	35.8
Boston & Maine 1933	11,132	6,030	17,162	21.4	23,482	1,687	606	19.5	274	20.9	2,289	115	33.0
1932	11,284	6,933	18,217	12.0	22,286	1,667	605	19.4	305	23.1	2,691	118	39.2
N. Y., New H. & Hartf. 1933	17,006	9,007	26,013	8.4	24,820	1,638	589	19.3	224	17.7	2,842	124	35.5
1932	16,238	10,843	27,081	6.8	24,427	1,735	618	19.3	255	20.7	3,359	118	41.9
Great Lakes Region:													
Delaware & Hudson 1933	11,669	2,165	13,834	4.0	24,528	1,889	845	28.8	379	22.1	6,187	129	32.1
1932	12,095	2,738	14,833	3.5	25,932	1,952	878	28.7	415	24.2	7,252	129	37.1
Del., Lack. & Western 1933	19,172	3,358	22,530	11.3	25,131	1,731	665	22.5	307	21.4	6,936	167	48.9
1932	19,323	3,542	22,865	7.5	25,356	1,840	725	22.7	349	23.5	7,998	158	50.4
Erie (incl. Chi. & Erie) 1933	35,958	9,231	45,189	5.4	36,689	2,380	907	24.1	387	26.5	7,558	113	43.6
1932	36,299	10,743	47,042	3.7	38,079	2,519	958	22.9	404	28.4	8,199	112	46.2
Grand Trunk Western 1933	5,507	7,635	13,142	19.2	25,346	1,437	483	20.6	231	19.1	3,026	120	42.5
1932	4,707	8,608	13,315	9.5	25,376	1,432	498	20.7	242	19.3	3,152	114	44.1
Lehigh Valley 1933	19,915	4,195	24,110	18.0	29,578	1,762	706	24.2	333	21.5	5,993	154	40.7
1932	22,627	4,536	27,163	11.9	30,322	1,791	721	24.3	327	21.2	6,604	148	41.1
Michigan Central 1933	25,809	17,347	43,156	10.2	30,981	1,766	571	19.5	152	13.3	3,336	132	57.4
1932	25,703	16,850	42,553	7.0	31,667	1,723	557	18.9	162	14.5	3,268	127	57.0
New York Central 1933	83,080	53,112	136,192	25.7	33,939	2,253	906	25.6	278	18.4	5,981	112	40.8
1932	81,740	68,135	149,875	15.4	34,110	2,225	880	24.5	275	18.8	6,501	107	42.0
New York, Chi. & St. L. 1933	15,889	5,661	21,550	15.0	29,526	1,705	595	20.6	395	31.4	5,125	116	62.9
1932	15,805	5,646	21,451	10.5	29,302	1,774	605	20.0	412	34.1	5,326	112	61.5
Pere Marquette 1933	13,652	4,837	18,489	2.6	25,164	1,463	564	26.1	313	21.0	2,531	107	62.2
1932	13,380	3,892	17,272	3.5	24,842	1,491	573	24.6	323	22.1	2,484	102	57.6
Pitts. & Lake Erie 1933	17,724	6,747	24,471	27.7	47,834	3,240	1,770	44.9	112	4.3	11,595	125	22.9
1932	19,151	6,033	25,184	20.5	41,250	3,364	1,838	44.1	122	4.8	13,029	101	20.9
Wabash 1933	19,313	7,368	26,681	6.9	29,006	1,608	532	19.4	318	26.6	3,454	130	47.0
1932	19,366	7,385	26,751	4.6	32,817	1,680	552	19.0	352	29.9	3,768	120	46.7
Central Eastern Region:													
Baltimore & Ohio 1933	98,117	14,746	112,863	14.0	24,848	1,875	810	29.5	272	15.7	4,883	162	37.3
1932	95,085	15,085	110,170	9.8	24,411	1,880	814	29.1	309	18.0	5,429	159	38.7
Big Four Lines 1933	21,005	18,477	39,482	19.8	31,791	1,880	864	31.4	436	23.4	6,183	128	48.0
1932	23,376	18,310	41,686	11.1	32,126	1,918	861	29.5	403	22.9	6,015	116	46.6
Central of New Jersey 1933	18,118	5,844	23,962	23.5	27,422	2,144	1,026	34.5	192	9.9	6,642	137	31.2
1932	18,354	5,890	24,244	18.0	26,328	2,004	902	31.4	192	11.0	6,729	152	35.4
Chicago & Eastern Ill. 1933	5,911	1,973	7,884	17.8	22,735	1,327	597	31.0	404	21.2	3,395	146	33.6
1932	6,046	2,077	8,123	14.0	24,374	1,431	623	28.4	436	24.7	3,772	139	35.9
Elgin, Joliet & Eastern 1933	9,957	3,768	13,725	20.7	14,252	1,665	809	39.4	136	6.0	4,170	149	26.5
1932	9,529	3,825	13,354	8.0	16,234	1,919	940	39.7	172	7.7	5,127	130	29.1
Long Island 1933	782	3,324	4,106	1.9	5,826	825	334	31.2	74	4.6	771	307	30.0
1932	780	4,080	4,860	.7	5,981	747	295	29.0	75	4.7	908	366	37.4
Pennsylvania System 1933	252,112	36,756	288,868	9.2	30,294	2,111	916	29.2	249	14.1	6,826	141	38.3
1932	248,796	43,170	291,966	6.6	30,919	2,167	929	28.4	276	15.9	7,634	136	42.0
Reading 1933	39,813	6,756	46,569	16.2	22,835	1,842	861	35.5	236	11.8	7,568	157	38.8
1932	39,135	8,390	47,525	5.6	23,581	1,929	905	33.7	264	13.4	8,643	146	39.6
Pocahontas Region:													
Chesapeake & Ohio 1933	44,715	6,205	50,920	1.6	45,496	3,337	1,782	45.7	884	35.7	14,353	87	39.9
1932	46,831	6,036	52,867	2.6	43,349	3,202	1,707	44.4	796	32.3	13,419	85	41.0
Norfolk & Western 1933	40,688	3,777	44,465	3.1	43,712	2,982	1,576	43.5	625	24.0	12,496	120	40.2
1932	41,408	3,979	45,387	1.0	41,656	2,861	1,465	41.6	573	23.3	11,525	118	40.0
Southern Region:													
Atlantic Coast Line 1933	29,010	6,191	35,201	14.2	19,095	1,038	321	16.4	170	17.3	1,164	128	38.6
1932	28,852	7,617	36,469	6.6	20,272	1,134	360	17.6	201	19.7	1,421	116	43.9
Central of Georgia 1933	7,751	1,563	9,314	22.6	19,497	1,081	393	19.7	252	18.7	1,235	143	43.2
1932	8,310	1,587	9,897	22.2	20,038	1,190	426	19.0	263	20.3	1,371	137	43.3
Ill. Cent. (incl. Y. & M. V.) 1933	54,061	11,471	65,532	25.0	24,182	1,497	624	28.5	397	23.5	3,904	156	45.6
1932	54,560	11,402	65,962	15.6	25,342	1,595	630	26.7	389	24.3	3,845	143	45.1
Louisville & Nashville 1933	52,836	5,672	58,508	24.4	21,533	1,473	688	33.6	346	18.2	3,923	156	46.3
1932	53,125	5,872	58,997	16.2	21,425	1,422	654	31.7	325	17.5	3,649	154	45.4
Seaboard Air Line 1933	13,826	5,271	19,097	5.0	22,689	1,398	441	19.3	356	31.7	1,554	127	55.2
1932	15,405	5,624	21,029	3.5	21,312	1,337	419	18.4	328	29.8	1,557	127	58.3
Southern 1933	30,277	21,133	51,410	15.8	19,670	1,195	444	20.4	285	21.3	2,220	162	37.2
1932	39,148	26,795	65,943	14.0	19,973	1,212	440	19.4	231	17.9	2,281	157	38.0
Northwestern Region:													
Chi. & North Western 1933	47,140	16,707	63,847	9.3	20,079	1,340	435	19.5	185	15.2	1,401	150	35.5
1932	45,301	17,544	62,845	6.7	20,373	1,411	474	21.0	246	20.0	1,831	146	42.3
Chicago Great Western 1933	4,558	2,442	7,000	13.2	27,870	1,657	587	22.3	535	40.9	2,557	161	69.0
1932	5,190	3,323	8,513	10.1	31,808	1,942	692	22.1	541	41.2	3,158	142	61.9
Chi., Milw., St. P. & Pac. 1933	62,785	12,744	75,529	3.2	22,508	1,481	606	26.1	273	17.1	1,837	145	42.2
1932	64,479	11,942	76,421	3.2	23,335	1,548	612	25.4	312	20.7	2,118	137	47.9
Chi., St. P., Minneap. & Om. 1933	2,264	6,301	8,565	10.2	15,716	1,124	448	24.5	337	21.3	1,686	133	42.2
1932	2,332	7,941	10,273	9.0	16,176	1,096	438	24.1	308	20.5	1,847	140	46.8
Great Northern 1933	44,717	7,585	52,302	5.1	22,160	1,513	623	25.4	220	13.3	1,365	156	32.2
1932	45,131	7,079	52,210	6.3	22,467	1,550	634	24.8	225	13.9	1,415	155	31.5
Minneap., St. P. & S. St. M. 1933	20,267	2,276	22,543	3.9	14,551	961	384	23.0	179	12.2	930	148	62.8
1932	20,468	2,501	22,969	4.2	16,714	1,128	445	22.2	216	15.3	1,141	127	57.1
Northern Pacific 1933	44,020	3,716	47,736	10.4	21,066	1,415	586	24.2	178	10.7	1,325	187	31.1
1932	42,911	4,160	47,071	9.1	21,941	1,511	623	23.7	220	13.6	1,620	170	35.7
Oreg.-Wash. R. R. & Nav. 1933	8,507	1,583	10,090	9.9	20,370	1,269	492	21.7	192	12.8	890	169	36.9
1932	9,030	1,793	10,823	5.4	20,693	1,328	561	25.1	255	14.9	1,244	175	43.9
Central Western Region:													
Alton 1933	4,949	4,377	9,326	14.6	24,374	1,234	430	22.6	264	20.1	2,590	159	56.8
1932	4,282	3,335	7,617	6.0	25,530	1,294	455	22.6	381	28.7	2,932	133	58.2
Atch., Top. & S. Ft (incl. P. & S. F.) 1933	68,983	7,448	76,431	10.1	27,024	1,459	492	20.1	243	19.2	1,602	125	44.2
1932	68,266	9,635	77,901	10.1	28,461	1,632	580	21.3	301	22.2	2,024	113	48.2
Chi., Burl. & Quincy 1933	44,561	10,990	55,551	9.9	23,811	1,403	570	25.1	338	23.0	2,051	144	58.9
1932	46,704	11,621	58,325	6.9	26,194	1,672	725	26.8	430	27.5	2,719	132	59.8
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf) 1933	41,804	10,210	52,014	16.5	21,136	1,273	441	21.6	262	21.0	1,635	162	52.0
1932	41,805	10,577	52,382	11.7	22,205	1,378	487	21.7	320	25.3	2,010	150	52.6
Denver & R. G. Wn. 1933	13,909	2,551	16,460	4.8	21,051	1,525	627	24.8	192	12.1	1,260	201	26.9
1932	13,574	3,175	16,749	3.9	22,673	1,691	704	26.4	234	14.4	1,535	182	28.9
Los Angeles & Salt Lake 1933	4,833	943	5,776	7.5	26,700	1,589	559	19.8	416	32.1	1,939	154	52.4
1932	5,097	1,083	6,180	3.3	26,863	1,627	580	19.9	504	38.2	2,512	143	61.7
Oregon Short Line 1933	10,296	3,564	13,860	10.8	22,232	1,423	552	24.0	288	18.9	1,604	148	48.6
1932	9,741	4,836	14,577	8.2	25,140	1,636	675	25.4	344	20.8	2,022	129	51.6
Southern Pacific—Pacific Lines 1933	41,453	20,100	61,553	12.0	27,913	1,683	530	18.9	233	19.5	1,616	122	35.3
1932	44,889	22,799	67,688	11.4	26,554	1,695	551	19.7	260	21.2	1,975	125	41.0
Union Pacific 1933	25,449	7,099	32,548	20.0	36,737	1,717	616	20.9	400	29.7	3,452	134	46.9
1932	24,187	7,422	31,609	10.8	37,344	1,901	699	21.1	503	36.7	4,218	124	52.1
Southwestern Region:													
Gulf, Colo. & S. Fe 1933	13,966	1,809	15,775	5.0	23,144	1,359	532	24.4	189	12.6	1,535	125	47.5
1932	15,104	1,937	17,041	3.1	26,625	1,668	701	26.2	250	15.0	2,190	108	50.2
Mo.-Kans.-Texas Lines 1933	10,697	2,357	13,054	5.4	23,886	1,337	458	20.3	393	32.1	1,561	109	49.7
1932	12,163	2,480	14,643	5.0	24,884	1,477	514	20.5	376	30.3	1,676	93	48.9
Missouri Pacific 1933	27,479	13,720	41,199	14.4	26,059	1,515	561	23.2	450	32.1	2,509	148	59.2
1932	31,489	10,257	41,746	13.5	26,847	1,593	568	22.7	489	36.2	2,756	129	64.2
St. Louis-San Francisco 1933	26,011	4,176	30,187	4.2	20,849	1,240	487	24.7	304	20.4	1,769	152	40.2
1932	28,420	4,940	33,360	3.3	20,857	1,317	495	22.8	273	19.6	1,756	143	38.0
St. Louis Southwestern Lines 1933	4,700	2,105	6,805	12.0	24,647	1,357	426	17.9	394	35.3	1,410	123	51.1
1932	5,957	2,864	8,821	10.0	24,565	1,440	424	17.5	297	29.1	1,379	114	45.1
Texas & New Orleans 1933	9,331	11,091	20,422	6.6	20,305	1,194	387	18.7	271	22.6	1,211	103	46.7
1932	12,762	9,953	22,715	7.3	19,810	1,225	414	19.9	279	22.2	1,372	101	46.0
Texas & Pacific 1933	5,940	3,770	9,710	7.7	28,109	1,739	552	19.5	425	36.6	2,120	90	30.4
1932	5,724	4,049	9,773	13.7	25,380	1,580	471	18.4	394	36.6	1,977	89	33.3

purpose shall be added to the general highways funds of the state." Distinguishing plates for each class of vehicle are provided for $2. All certificates and permits are for a term of one year, renewable as a matter of right unless wilful or continued violations of the act or the commission's rules can be shown.

The hours of service section provides that no driver shall be on duty continuously for more than 12 hours or for more than 16 hours in any 24-hour period. After 12 hours of continuous duty a relief period of eight hours is required while a 10-hour lay-over is fixed for the driver who has been on duty 16 hours in any 24-hour period.

Other provisions require indemnity bonds and fix penalties for violations of the act; maximum penalties are a fine of $500 or imprisonment for 11 months or both fine and imprisonment.

Club Meetings

The Toronto Railway Club will hold its next meeting at the Royal Connaught Hotel, Hamilton, Ontario, on May 5. W. E. Sprague, of the Canadian Westinghouse Company, will speak on the AB air brake.

The Northwest Car Men's Association (St. Paul) will hold its next meeting at the Y. M. C. A. Building, Minnesota Transfer, on Monday evening, May 1. V. A. Tetu, superintendent of shops and coach yards of the Great Northern, will speak on cleaning and reconditioning of passenger equipment.

St. Louis-Chicago Barge Line to Start July 1

A St. Louis-Chicago barge line to connect at St. Louis with the lower Mississippi barge line of the Federal barge lines and providing through rates from the Lakes to the Gulf, will be started about July 1, according to an announcement by Major General T. Q. Ashburn, president of the Inland Waterways Corporation. The opening of this line has been approved by the secretary of war, and army engineers have certified the navigability of the channel of the Illinois waterway.

Katy's Century of Progress Exhibit

The natural resources of the southwest will be displayed by the Missouri-Kansas-Texas at the Century of Progress Exposition, which will open in Chicago on June 1. Twelve of the principal cities served by the road will be given prominent places in the exhibit, which will present a graphic picture of the progress of the southwest in the last 100 years, and of the four principal sources of wealth—cotton, wheat, live stock and oil. The story will be told with dioramas and specially prepared literature.

New Industries on the Norfolk & Western

The new industries and additions to existing plants built on locations along the line of the Norfolk & Western in 1932 numbered 180, of which 106 were new plants and 74 were additions. The total was an increase of 35 over 1931 and the aggregate of capital investments is nearly 100 per cent over 1931. These enterprises are classified as follows: For the manufacture of foods, etc., 30; textiles and their products, 16; forest products, 11; petroleum and coal, 12; etc. Classified by location, 82 were in Ohio, 77 in Virginia, 12 in North Carolina, 7 in West Virginia and 2 in Maryland.

Reduced Transcontinental Rates on Citrus Fruits Proposed

The western transcontinental railroads have applied to the Interstate Commerce Commission for authority to publish on short notice tariffs reducing the freight rates on oranges and lemons from California points of production to the East from $1.55 and $1.50 to $1.43 per 100 lb. to meet the competition of vessels through the Panama canal. The application pointed out that the water-borne citrus traffic has grown from 751 tons in 1928 to 17,239 tons in 1932 and that the water rate, exclusive of refrigeration, is $1.22.

February Locomotive Shipments

February shipments of railway locomotives from principal manufacturing plants as reported to the Department of Commerce totaled seven locomotives, as compared with two in January, five in February, 1932, and 15 in February, 1931. Unfilled orders at the end of February totaled 65 locomotives as compared with 71 at the end of January and 172 at the end of February, 1932.

Of the 65 locomotives involved in the unfilled orders at the end of February 63 were electrics and two steam as compared with the 70 electrics and one steam at the close of the previous month. These figures do not include data on locomotives built by railroads in their own shops.

Workmen's Compensation Bill Introduced

Senator Wagner, of New York, has introduced in the Senate a bill, S. 1320, to provide compensation for disability or death resulting from injury to employees in interstate commerce. He says that this represents a development of earlier bills on the subject which have been amended to include suggestions made after conferences between compensation experts and representatives of railroads and railroad labor organizations. The provisions of the bill would be administered by the United States Employees Compensation Commission augmented by two additional commissioners, one to represent employers and one to represent employees. Costs would be prorated among insurance carriers.

Your Mind, Your Foot, Your Shoes

Circular No. S-362 of the Safety Section, A. R. A., presenting the agenda for safety committees during the month of May, is devoted to foot injuries; a certain unit in a certain mechanical department having found that, according to its accident records, 18 per cent of all injuries to employees were foot injuries. A record of this character deserves the attention of every officer and employee. No hand or foot gets in harm's way without the action of the mind, therefore the rule for prevention is very simple: Always Think in Season. Safety shoes are popular where they are well known. The circular reminds those who are suspicious of the clumsiness of the shoes or their costliness, that these objections have no weight. Shoes of numerous makers are durable, light in weight, and cost no more than other shoes.

North Western-Soo Co-ordination

The Minneapolis, St. Paul & Sault Ste. Marie and the Chicago & North Western have entered into an agreement whereby the latter railroad will haul cars for the "Soo Dominion" train between Chicago and St. Paul, Minn. Heretofore, the Minneapolis, St. Paul & Sault Ste. Marie and the Canadian Pacific have operated the "Soo Dominion" between St. Paul and Vancouver, B. C. during the winter months, and have extended the service over the Soo Line into Chicago during the summer months. This year, effective June 1, "Soo Dominion" cars from Chicago will be put into the "Viking" of the North Western which leaves Chicago at 10 a.m. and arrives in St. Paul at 8:25 p.m., where connection is made with the "Soo Dominion" which leaves St. Paul at 9:50 p.m. Returning, "Soo Dominion" cars for Chicago will be taken by the "Viking" which leaves St. Paul at 8:45 a.m. and arrives in Chicago at 7:05 p.m.

Ohio Truck Regulation Sustained

The Supreme Court of the United States, in a decision rendered on April 10, affirmed a decision of the supreme court of Ohio which had sustained an order of the Public Utilities Commission of Ohio denying an application of the Wolverine Motor Freight Lines for authority to operate as a common carrier of property over a designated route from a point in Ohio to the Ohio-Michigan state line, with a point in Michigan as the final destination, on the ground that the designated route was so congested that that addition of the applicant's proposed service would create an excessive hazard. The New York Cenral and the Pennsylvania had asked that the commission dismiss the application. The Supreme Court said that the order did not prohibit the applicant from transporting goods in interstate commerce over other highways of the state and that the effect of the denial upon interstate commerce was merely incidental.

"The Wings of a Century"

"The Wings of a Century," a pageant of transportation, will be displayed on the open-air stage opposite the Travel and Transport building at the Century of Progress Exposition, which opens in Chicago on June 1. Rehearsals will begin May 1. The cast for the pageant will include 200 persons, of whom 20 will be children. In addition, there will be 12 locomotives, 70 horses, boats, stage coaches, early automobiles and an airplane. The 12 locomotives are replicas or originals of the "first" locomotives to haul trains on American railroads and include the Tom Thumb of the Baltimore & Ohio, built in 1829; the British-built John Bull of the Camden & Amboy, constructed in 1831 by George Stephenson; the De Witt Clinton of the New York Central, built in 1831; the Thomas Jefferson of the Winchester

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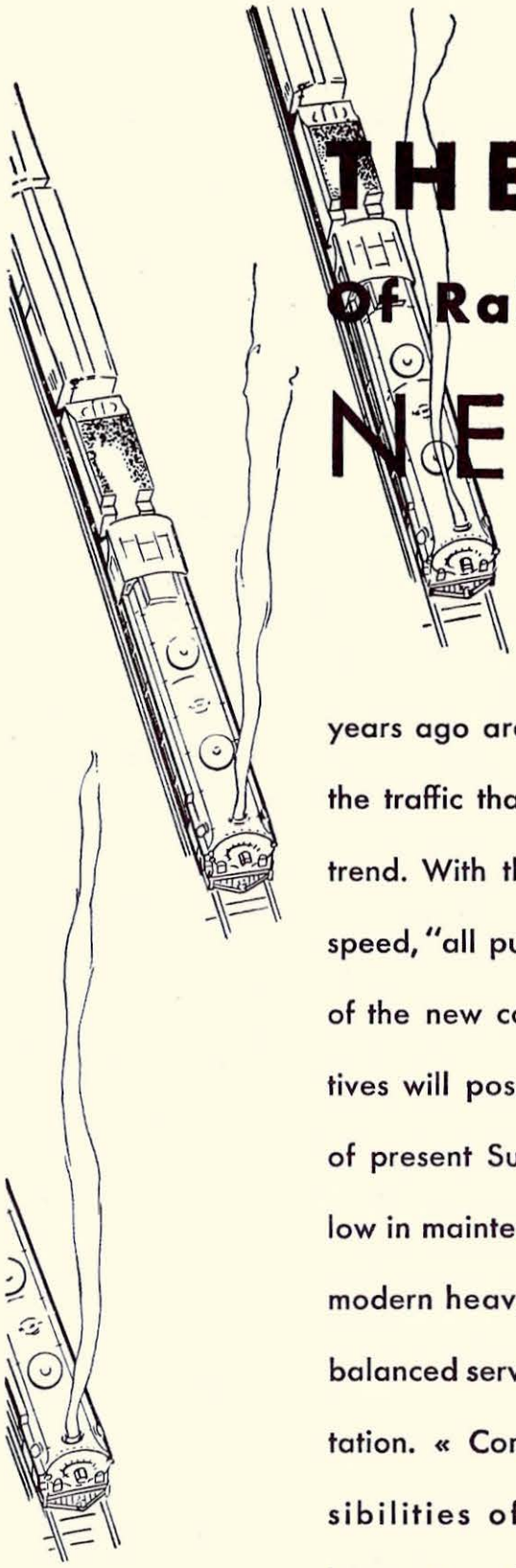
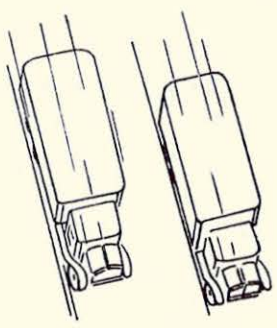


THE NEW IDEA

Of Railroad Service Requires

NEW POWER

Door-to-door delivery; over-night service and speed of freight movement unthought of a few years ago are developments by which the railroads will win back the traffic that is naturally theirs. « Locomotives must fit into this trend. With this in mind Lima is prepared to build the light, high speed, "all purpose", 4-6-4 locomotives that are an essential part of the new co-ordinated transportation service. « These locomotives will possess all the power-producing and economy features of present Super-Power and likewise will be easy on track and low in maintenance expense. They will work in partnership with modern heavy duty Super-Power and modern Switchers to give a balanced service of economical transportation. « Consult with Lima on the possibilities of light wheel load, fast locomotives for modern transportation.



LIMA LOCOMOTIVE WORKS, Incorporated

LIMA OHIO

& Potomac (now a part of the B. & O.); the Mississippi of the Illinois Central, built in 1836; and the Seth Wilmarth of the Cumberland Valley (now a part of the Pennsylvania) built in 1851.

Express Aggregating Rule Found Not Justified

The Interstate Commerce Commission has found not justified tariff supplements filed by the Railway Express Agency which provided for reduced rates based on the aggregate weight of small shipments handled together on the ground that they would result in unlawful discrimination and prejudice. The commission said that the use of the rule would be confined chiefly to the manufacturer and the relatively large merchant, while the method of handling their shipments would not be substantially different from that accorded the numerous shipments of the "unorganized mass of the people." The company had estimated that the rule would tend to reduce its revenues based on existing volume of business by about $1,500,000 per annum but it would expect to offset this loss by retrieving a large volume of business from other transportation agencies; and the commission said that "the record is far from convincing that this could be done."

Freight Traffic In February

Freight traffic handled by the Class I railroads in the first two months of 1933 amounted to 38,997,692,000 net ton-miles, according to reports compiled by the Bureau of Railway Economics. This was a reduction of 5,433,108,000 net ton-miles, or 12.2 per cent, under the corresponding period in 1932 and a reduction of 18,404,714,000 net ton-miles, or 32.1 per cent, under the same period in 1931.

Railroads in the Eastern district for the two months reported a reduction of 9.3 per cent in the volume of freight traffic handled compared with the same period in 1932, while the Southern district reported a reduction of 7.5 per cent. The Western district reported a decrease of 18.3 per cent. The freight traffic handled in February amounted to 19,063,436,000 net ton-miles, a reduction of 2,585,339,000 net ton-miles, or 11.9 per cent, under the same month in 1932 and 8,034,035,000 net ton-miles, or 29.6 per cent, under February, 1931. In the Eastern district freight traffic in February was a reduction of 9.2 per cent compared with the same month in 1932, while the Southern district reported a decrease of 5.1 per cent. The Western district reported a reduction of 18.3 per cent.

Appropriation Asked to Continue I.C.C. Hearing

Senator McGill, of Kansas, on April 13 introduced in the Senate a bill to authorize an appropriation of $8,000 for the continuation of hearings by the Interstate Commerce Commission at Chicago in the western grain rate case. During the recent hearings before Examiners Mackley and Hall at Chicago (April 5) a telegram was read from Secretary McGinty to the effect that, unless the hearing was completed by April 15, it would be necessary to adjourn to Washington, because of the exhaustion of the commission's funds; and representatives of the shippers present estimated that they would need another month's time to present their case. They also objected to going to Washington and increasing their own expenses. This case has been pending for several years and a record of some 54,000 pages was taken prior to the original report of the commission. The case was re-opened for further hearing after the Supreme Court had sustained an injunction against the commission's order on the ground that the commission had declined to grant a rehearing after deciding the case on a "stale record."

Later Commissioner Meyer sent a telegram to Chicago stating that the hearing would be adjourned on April 15 but resumed on July 6.

Executives Prepare for Rate Investigation

Executives of major western railroads met in Chicago on April 18 to confer on proposed reductions of basic passenger fare and shipper applications to the Interstate Commerce Commission for drastic reduction in freight rates, I. C. C. investigation No. 26,000. As a result of the discussion, a Passenger Rates Committee, consisting of Presidents Paul Shoup, Southern Pacific; Fred W. Sargent, Chicago & North Western; Ralph Budd, Chicago, Burlington & Quincy; L. W. Baldwin, Missouri Pacific, and Carl R. Gray, Union Pacific, was appointed to study the possibilities of fare reduction and report in May. It was felt that a reduction in freight rates would not stimulate business generally as maintained by shippers, but would be disastrous for the railroads, since they could not offset the loss in revenue by lowering wages or making further operating economies.

On the following day executives of eastern roads, meeting in New York, appointed committees of presidents, traffic officers and legal counsel to act in the I. C. C. inquiry in conjunction with committees representing railways in other sections. The eastern presidents' committee consists of F. E. Williamson, New York Central; J. J. Bernet, Chesapeake & Ohio; Daniel Willard, Baltimore & Ohio, and J. J. Pelley, New York, New Haven & Hartford; also Elisha Lee, vice-president, Pennsylvania.

Williamson Protests Rail Taxes

Describing the New York Central as the heaviest taxpayer among the railroads of the United States, F. E. Williamson, president of that road, in a statement issued on April 11, stressed the "imperative need" for a change in taxation policy by the states with respect to railroads.

"Figures that have just come to my desk reveal that the New York Central Railroad pays more taxes than any other single railroad corporation in the country," he said. "Its taxes for 1932 amounted to $30,083,642.

"In 1931, we performed nine per cent of the railroad business of the United States as measured by operating revenues and paid 10½ per cent of the taxes assessed against all the approximately 160 Class I railroads. Last year, with practically no federal income taxes, 10¼ cents out of every dollar of operating revenues went to the government. Had we been able to pay only 8¾ cents out of a dollar, as did one of our largest competitors, it would have meant a saving of $3,500,000. A Canadian railroad, stretching entirely across the continent and owner of extensive lands, hotels and other properties, has tax bills which average only about $7,000,000 each year.

"Under the present onerous taxation policy of New York State and particularly of many of its local communities, the railroads operating within its borders were assessed in this single state $27,884,000, against a total of $275,000,000 assessed by the other 47 states and the federal government. Of this enormous sum levied for government in the Empire State, the New York Central paid more than half."

Tie Stocks

There were 32.5 per cent less crossties in the hands of the commercial tie producers on January 1, 1933, than on January 1, 1932, according to statistics compiled by the Railway Tie Association from the inventories of producers, whose stocks are estimated to include more than 75 per cent of the total in the hands of all commercial producers of the country.

In other words, these producers had on hand uninvoiced at the beginning of this year 5,745,599 ties as compared with 8,636,999 ties a year previous. On this basis, there were not more than 7,500,000 ties uninvoiced in the hands of all of the producers of the country on January 1 last.

Of these stocks, less than 8 per cent were for use untreated, while 72 per cent were oak ties awaiting treatment and approximately 20 per cent were ties of other species for treatment. The largest stocks were in the area designated as Group No. 4 (Kentucky, Tennessee, Alabama, Mississippi and that portion of Louisiana east of the Mississippi river), in which approximately 2,350,000 ties were on hand awaiting sale. Next in magnitude of stocks on hand was that area designated by the association as Group No. 2 (New York, Pennsylvania, New Jersey, Delaware, Maryland, Ohio, Indiana and Illinois) in which there were approximately 1,670,000 ties in the hands of producers. Group No. 6 (including Nebraska, Iowa, Kansas, Missouri, Oklahoma, Arkansas, Texas and that portion of Louisiana west of the Mississippi river) reported stocks approximating 1,275,000 ties.

National Chamber to Discuss Transportation

Transportation will be one of the major business issues to be discussed at the twenty-first annual meeting of the Chamber of Commerce of the United States at Washington, D. C., May 2-5. One general luncheon session and two round table conferences will be devoted specifically to transportation questions, and a third will include consideration of railroad reorganization problems. In the transportation program General W. W. Atterbury, president of the Pennsylvania, will give an address on "The Railroads' Relation to Business Recovery" at a luncheon meeting on Thursday, May 4. The two trans-

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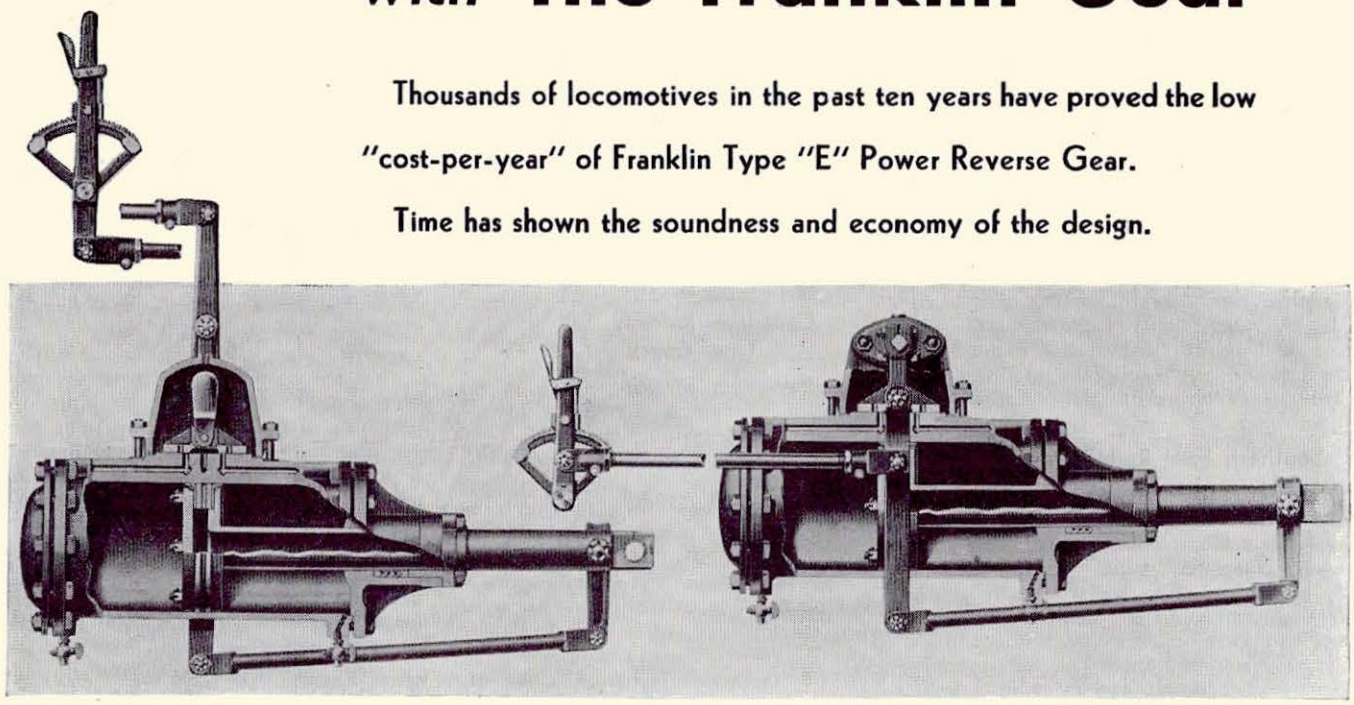
LOW "COST-PER-YEAR" *with* The Franklin Gear



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Thousands of locomotives in the past ten years have proved the low "cost-per-year" of Franklin Type "E" Power Reverse Gear.

Time has shown the soundness and economy of the design.

DESIGN DETAILS

A balanced slide valve is used. Every air man is familiar with this type and understands the little maintenance required.

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The seal between the Rocker Arm and the Valve Chest is accomplished by a metallic joint. This is an advantage over soft packing.

Franklin Type "E" Power Reverse Gears give accurate control of power at a mimimum of expense. Specify them.

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NEW YORK CHICAGO MONTREAL

portation round-table conferences—that on "National Transportation Policies" on Wednesday, May 3, and that on "National Water Transportation Policies" on the following day—are designed to bring out discussion of the proposals with respect to changes in federal policy regarding transportation and the serious problems of relationship between various forms of transportation. The report of the Chamber's Special Committee on Competing Forms of Transportation has been referred to the Annual Meeting for consideration, and its recommendations are expected to form a basis for discussion.

Daniel Willard, Jr., counsel of the Railroad Credit Corporation, will discuss railroad reorganization problems at the round-table conference on "Debtor-Creditor Relations," to be held Thursday afternoon, May 4. Opportunity for general discussion will be afforded at the round-table conferences, and resolutions on these fact changing problems of transportation will be in order.

Southern Fare Reductions Denied

Division 2 of the Interstate Commerce Commission has denied the fourth section application filed by the Southern and subsidiary companies in its system for authority to put into effect for six months coach fares at the rate of one and one-half cents a mile, between many points, without making similar reductions at intermediate points. The denial was made in a brief formal order without any statement of reasons; but, under the policy indicated in the handling of some other somewhat similar applications, it is understood that it was based on the fact that the road proposed to apply this drastic reduction largely in the territory where it meets the competition of the two-cent fares recently established by the Louisville & Nashville, and not on its more easterly lines. Moreover the Southern did not propose reductions in the rates applicable in sleeping and parlor cars whereas the L. & N. proposed a three-cent rate for such service.

In its statement to the commission accompanying the application the Southern had shown that its number of passengers carried had decreased from 21,914,632 in 1920 to 2,548,297 in 1932, a reduction of 88.4 per cent; the number of passengers carried one mile had dropped from 1,229,054,088 in 1920 to 328,300,233 in 1932, and the passenger revenues had decreased from $37,122,638 to $8,108,268. Consideration has been given to ways and means of stimulating passenger travel by rail with the hope of increasing revenues from this source and the company has become convinced that the tremendous decrease in passenger business, exceeding the decrease in freight business, is due in the largest measure to the inroads of other means of transportation. For some time it has been experimenting with reduced fares for short hauls over certain of its divisions and from these experiments the impression has been gained that possibly the solution of the passenger problem may lie in the extension of reduced passenger fares for long haul transportation. The experiment, in so far as short haul traffic is concerned, was regarded as encouraging and the purpose of the proposed general reduction was to see whether a general reduction would stimulate the movement of passengers by rail to such an extent that a substantial increase in revenue would follow.

The Baltimore & Ohio, whose application for fourth section relief to enable it to establish two-cent and three-cent fares between Cincinnati, Louisville and St. Louis without making reductions at intermediate points was denied, has filed a new application which includes reductions at the intermediate points.

The Louisville & Nashville and the Nashville, Chattanooga & St. Louis have applied to the commission for authority to establish on one day's notice limited fares good in sleeping and parlor cars at the rate of two cents a mile for the distance traveled.

Canadian Railway Bill a Time-Consumer

Slow progress is being made in the House of Commons at Ottawa on the legislation implementing the Duff Commission report. Thus far in committee of the whole House the Liberals (the opposition party) have been fighting some of the sections of part I of the bill relating to the substitution of a board of trustees for the present board of directors of the Canadian National, and late last week, when the bill was last before the House, Liberals renewed their demand for inclusion of another safeguard against the board of trustees exercising arbitrary powers, particularly in the abandonment of branch lines.

It was during this discussion that a flare-up developed between Hon. Robert J. Manion, Minister of Railways, and Hon. William R. Motherwell, a Saskatchewan Liberal and former Minister of Agriculture. The latter charged that the Conservatives in the Senate, when the Liberals were in power, consistently blocked bills to enable the C.N.R. to build branch lines while the same Senate passed C.P.R. bills with neatness and dispatch. At another stage in the debate Premier Bennett and Rt. Hon. Mackenzie King, Liberal leader, had a more or less private fight over the relative legislative efficiency of the House and the Senate. So far only two or three sections of the first part of the bill have been passed, so it looks like one of the biggest time-consumers for the House this session.

When a legislative committee in its desire to effect economies for the public treasury recommends appointment of a commission to inquire into the railway situation in Canada and when that commission in its findings urges restrictions upon the scope of investigations conducted by the legislative committee which really gave the commission birth, the committee is likely to become "peeved". That is the state of mind of the House Committee on National Railways and Shipping at Ottawa. It was through the activity of that committee that the Duff Commission was named by Premier Bennett.

That Commission, it will be recalled, recommended that if this House committee held sittings thereafter it should not subject officers of the Canadian National to the embarrassment and demoralization of examination by legislators. At its first meeting of this session, held at Ottawa last week, the committee expressed itself on this finding of the Commission and the temporary chairman, Richard B. Hanson, a New Brunswick Conservative, expressed strong resentment at what he called "a slap in the face". It was finally decided, however, that when the committee meets after the short Easter recess it will have before it for questioning S. J. Hungerford, acting president of the road, and Victor Smart, Deputy Minister of Railways and a member of the board of directors.

Seek to Control Carload Damage

The Committee on Freight Claim Prevention of the Freight Claim division of the American Railway Association has adopted a plan to control carload damage and to secure uniformity of practice among the railroads. The plan, which is proposed to be carried out during the next three years, embodies the following fundamental features: (a) Each railroad will maintain a separate record of carload damage payments, such that the payments can be separated by shipping points, commodities and shippers; (b) the record will be so arranged that "high spots" or recurring troubles at each shipping point and with each shipper will be evident; (c) each carrier will appoint a representative to study these high spots and apply corrective measures. The representative will have a thorough knowledge of freight cars and be skilled in container construction, as well as in modern loading methods.

The studies to be made will cover all kinds of carload damage, including rough handling, damage due to improperly cleaned and bedded cars, water, cinder and snow damage, broken packages, torn sacks, dented cans, sweat damage, weevil damage, concealed damage, vertical vibration damage, etc. The operation of the plan will be further strengthened by imparting special information to the men selected to study the subject.

The plan is based upon studies of loss and damage payments since 1921. Using 1921 as a base, loss and damage for 1932 has been reduced 81.5 per cent, but when the damage items are separated from those representing losses and service failures, it is found that damage has been reduced 63.2 per cent, loss 91.1 per cent and service failures 80.2 per cent. When the loss and damage bill during this period is broken down and charted by the various causes, it is found that in unlocated damage and rough handling there has been a gradual increase during the years 1925 to 1930; but prior to 1925 and subsequent to 1930, the record shows decreases, the year 1932 showing a reduction of 63.2 per cent.

It is expected that the plan will bring about a more classification of causes and will develop valuable information.

Additional Names Added To I. C. C. Panel of Trustees

Following the filing of a reorganization petition by the Chicago & Eastern Illinois in the federal court at Chicago on April 18 the Interstate Commerce Commission added

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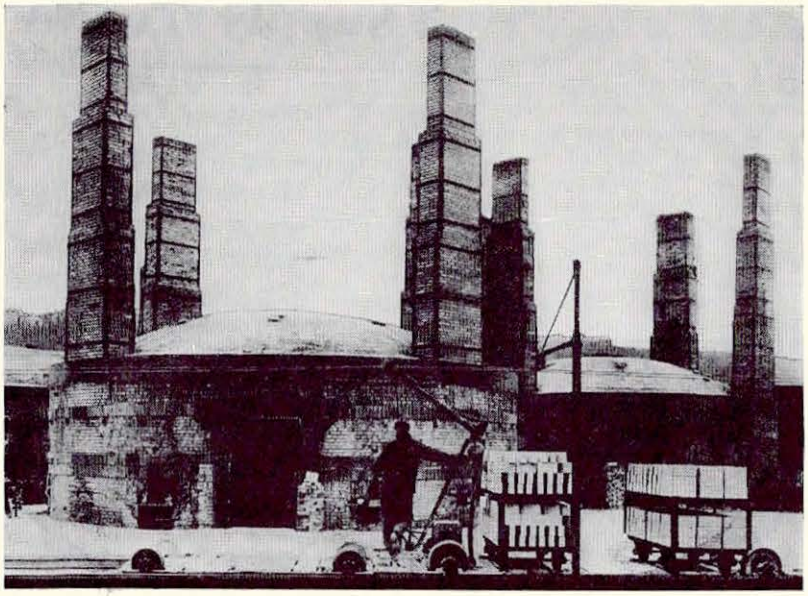

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To Supply You With ARCH BRICK

GOOD Arch Brick is the foundation of a satisfactory locomotive Arch. Realizing this the American Arch Company, after a survey of the brick resources of the country, picked the following manufacturers from which to supply the railroads:

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Pennsylvania
Ohio
Kentucky
Alabama
Missouri

NORTH AMERICAN REFRACTORIES CO.
Pennsylvania
Kentucky

IRONTON FIRE BRICK CO.
Ohio

DENVER SEWER PIPE & CLAY CO.
Colorado

ATHENS BRICK & TILE CO.
Texas

MOULDING-BROWNELL CORP.
Ohio

GLADDING-McBEAN & CO.
California
Washington

DIAMOND FIRE BRICK CO.
Colorado

DOMINION FIRE BRICK & CLAY PRODUCTS LTD.
Saskatchewan, Canada

CANADA FIRE BRICK CO., LTD.
Ontario, Canada
Quebec, Canada

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

AMERICAN ARCH COMPANY

INCORPORATED

NEW YORK CHICAGO

Locomotive Combustion Specialists

four additional names to its panel of standing trustees and telegraphed them to the court, as follows: Kenneth F. Burgess, Henry P. Chandler, Herbert J. Friedman and Luther M. Walter. They are all lawyers located in Chicago and were selected with the Chicago & Eastern Illinois in mind, but, like the twenty already placed on the panel after petitions had been filed by the Missouri Pacific, the Akron, Canton & Youngstown and the Minarets & Western, they are available for appointment by the courts as trustees in any reorganization case. In the previous cases the commission had named each time an officer of the railroad involved, but the latest list does not include any officer of the C. & E. I.

The Supreme Court of the United States on April 17 entered an order amending its general orders in bankruptcy, which constitute a code of uniform procedure for the federal courts, giving effect to the amendment of the general bankruptcy law which was approved on March 3 and which establishes the new form of procedure for railroad reorganization under the jurisdiction of the courts and the Interstate Commerce Commission. The new order prescribes the details of procedure following the general provisions of the new law.

Kenneth F. Burgess is connected with the firm of Cutting, Moore & Sidley and was for several years general solicitor of the Chicago, Burlington & Quincy, with which he had served since 1915, except for a period during which he was regional commerce counsel under the U. S. Railroad Administration.

Luther M. Walter is a member of the law firm of Walter, Burchmore & Belnap, which has long been engaged in practice before the Interstate Commerce Commission. He was formerly an attorney for the commission and has recently represented the Baltimore & Ohio as special counsel in cases before the commission relating to the consolidation plan.

Roosevelt Railway Message Encounters New Delay

(*Continued from page 601*)

comprising about 40 per cent of the commission's organization, and for the division of the remainder between an independent tribunal and a Bureau of Transportation in the Commerce Department. The reported plan is based on the theory of separating the legislative or quasi-judicial functions of the commission from its administrative functions and lists as among the latter, for transfer to the new bureau, the commission's bureaus of safety, locomotives, signals and train control, service, statistics, accounts, and finance. This would leave to the commission its bureaus of law, traffic, formal and informal cases, inquiry, and a new bureau of appeals, and, according to the report, the regulatory functions of the Shipping Board, while the administrative functions of the Shipping Board and the Inland Waterways Corporation would be put in the Bureau of Transportation. The latter would be divided into three divisions, land, water, and air, under the direction of an Assistant Secretary of Commerce for Transportation, while the commission would to some extent be connected with the Secretary of Commerce, possibly to place it in a position to call on the services of the bureau.

The Roper plan was submitted to the President over a week ago and has not yet been made public but published reports of its details have stirred up a good deal of opposition to it on the ground that it would weaken the commission.

Equipment and Supplies

FREIGHT CARS

INTERSTATE.—Negotiations are now under way with the Central Supply Company, Inc., Philadelphia, Pa., to repair 50 hopper cars and 50 gondola cars for this road. The Central Supply Company is now in the market for material to carry out this work.

THE AMERICAN REFRIGERATOR TRANSIT COMPANY, owned jointly by the Missouri Pacific and the Wabash, will spend $1,500,000 immediately for the reconstruction, repair and improvement of 1,300 refrigerator cars. About 75 per cent of the work will be done in the company's shops at St. Louis, 15 per cent at Kansas City, and 10 per cent at Pueblo. The work involves the application of high-speed wheels, trucks, springs and brakes, heavier metal roofs, modern ice boxes, additional insulation and modern water-proof floors. Orders have been placed for 500 integral type cast steel side frames; these were divided equally between the Scullin Steel Company and the American Steel Foundries. The new side frames are to be used in combination with "Coil-Elliptic" spring groups.

IRON AND STEEL

THE MISSOURI PACIFIC is inquiring for 7,000 tons of tie plates.

THE RICHMOND, FREDERICKSBURG & POTOMAC has contracted with the Bethlehem Steel Company for 1,020 tons of 130-lb. P. S. rail for delivery in April.

DELAWARE & HUDSON.—Bids are being invited on 500 tons of steel for two bridges on this road, one at Unadilla, N. Y., and the other at Salem.

MISCELLANEOUS

THE NEW YORK CENTRAL has recalled 300 men to work at its car shops in East Buffalo, N. Y.

THE NEW YORK CENTRAL has given a contract to the Otis Elevator Company, New York, for one electric passenger elevator, 14 electric freight elevators and one electric dumbwaiter, to be installed in the St. John's Park freight terminal, New York City.

Supply Trade

R. E. Hellmund, chief electrical engineer of the **Westinghouse Electric & Manufacturing Company,** at East Pittsburgh, Pa., has been appointed chief engineer.

The Wine Railway Appliance Company, Toledo, Ohio, has rearranged its territories; **George B. Christian** is now sales engineer for the western territory, with headquarters at Toledo, Ohio; this territory was formerly in charge of **Cyrus J. Holland.** The southeastern territory has been divided between **Earl H. Fisher,** of Toledo, and **Cyrus Hankins,** of Washington, D. C.

Louis C. Bihler, assistant to the president and general traffic manager of the **Carnegie Steel Company,** Pittsburgh, Pa., has retired at his own request, effective April 30. He entered the field of traffic and transportation in 1883, serving about 12 years with the Erie and with the St. Louis Southwestern. On April 1, 1895, he was appointed assistant to the general freight agent of the Carnegie Steel Company and until September 30, 1932, held the positions of general freight agent, traffic manager and assistant to the president and general traffic manager. From the latter date until his retirement, he has been on special assigned duties as assistant to the president. He has long been an active member of the Traffic Club of Pittsburgh, of which organization he served as governor for six years, as chairman of the board and in 1906 as president.

Louis C. Bihler

C. S. Clingman has been appointed sales manager of the western region, transportation and government department, of the **Johns-Manville Sales Corporation** with headquarters at Chicago, succeeding **John H. Trent,** promoted. Mr. Clingman was educated at Northwestern University having taken a mechanical engineering course in 1904. He began work with the Pullman Company in its apprentice school and was promoted in 1907 to assistant general shop foreman at the Pullman, Ill. works. The

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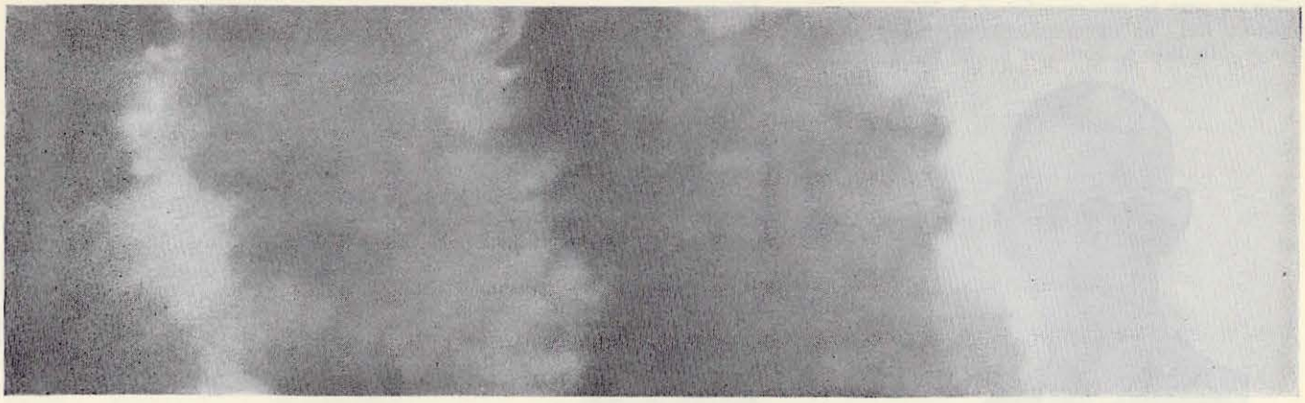

These Locomotives Are Increasing Operating Costs

By passing all the exhaust steam out the stack—they are losing many heat units—that could easily be reclaimed. It is a costly method.

This unnecessary waste can be eliminated by applying *Elesco feed water heaters,* in which heat from part of the exhaust steam is used to preheat the boiler feed water. This recovery of heat, reduces fuel consumption 12 to 15 per cent . . . that is reflected in lower operating costs.

Nearly 4000 locomotives are equipped to make these savings. Write today for details.

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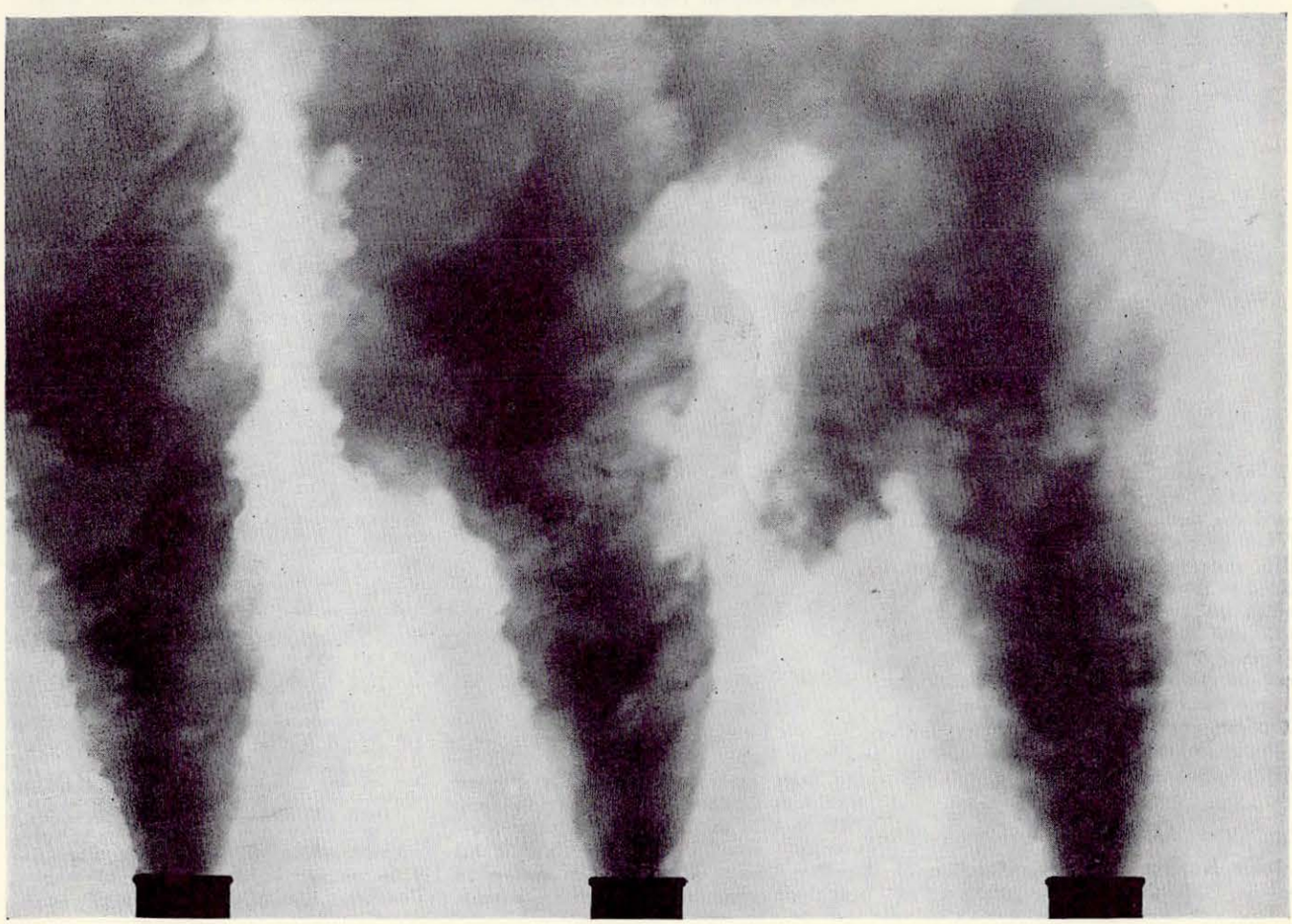

following year he was transferred to Wilmington, Del., as eastern mechanical inspector. In 1910 he returned to the Pull-

C. S. Clingman

man Manufacturing Company and Pullman works as mechanical inspector and the following year was promoted to general mechanical inspector with office at Chicago. Mr. Clingman entered the service of Johns-Manville in 1917 as a sales engineer in the southwest and for the past year has been serving as manager of the southwestern division with headquarters at St. Louis, Mo.

A. C. Pickett has been appointed manager of the southwestern division of the transportation and government department, with headquarters at St. Louis, succeeding

A. C. Pickett

Mr. Clingman. Mr. Pickett was born on October 5, 1897, at Waco, Texas. He entered the service of the Missouri-Kansas-Texas in the engineering department in 1916 and the following year was promoted to storekeeper at Trinity, Tex. He joined the army in the field artillery in 1919, and returned to the service of the Missouri-Kansas-Texas in 1920 on the staff of the chief engineer. In 1922 he entered the employ of the Johns-Manville Corporation as sales representative, which position he held until his recent appointment as above noted.

OBITUARY

John Newton Beckley, chairman of the board and the executive committee of the General Railway Signal Company and president of the Toronto, Hamilton & Buffalo, died on April 19 at his home in Rochester, N. Y., at the age of 84.

Fred B. Jones, who retired as vice-president of the Adams & Westlake Company, Chicago, in 1908, died in that city on April 9 of heart failure. He was born on January 11, 1858, at Peoria, Ill., and entered the employ of Crerar, Adams & Co., as a shipping clerk in 1878. In 1893 he entered the employ of the Adams & Westlake Company as a salesman, and in

Fred B. Jones

1901 was promoted to secretary. He held the latter position until 1905, when he was elected vice-president, the position he was holding upon his retirement in 1908.

Lewis Oliver Cameron, who had been engaged for a number of years in the railway supply business and as representative of railway supply manufacturers, with headquarters at Washington, D. C., died at his home in that city on April 13 after a lingering illness. Mr. Cameron was born on April 17, 1868, at Pittsburgh, Pa., and began his active business life in the

Lewis Oliver Cameron

railroad supply industry. He was southern sales representative of the Pressed Steel Car Company, at Washington, from 1905 to 1922 and of the Edgewater Steel Company from 1919 to the time of his death. Among others he had represented was the Youngstown Steel Door Company.

Financial

AKRON, CANTON & YOUNGSTOWN.—*Annual Report.*—The 1932 combined annual report of this company and its subsidiary, the Northern Ohio Railway Company, shows net deficit after interest and other charges of $60,125, as compared with net deficit of $26,059 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Railway Operating Revenues	$1,564,496	$1,915,686	−$351,190
Maintenance of way	190,881	246,174	−55,293
Maintenance of equipment	172,328	195,510	−23,182
Transportation	480,854	594,423	−113,569
Total Operating Expenses	1,090,780	1,346,096	−255,316
Operating ratio	69.05	70.23	−1.18
Net Revenue from Operations	484,275	570,282	−86,008
Railway tax accruals	141,109	148,889	−7,780
Hire of freight cars	140,700	176,300	−35,600
Joint facility rents	30	5,009	−4,979
Net Railway Operating Income	223,110	252,039	−28,929
Interest on funded debt	333,421	330,274	+3,147
Total Deductions from Gross Income	369,155	358,509	+10,646
Net Income	*60,125	*26,059	−34,065

* Deficit.

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Quenemo, Kan., to Osage City, 16 miles.

BESSEMER & LAKE ERIE.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $1,494,648, as compared with net income of $958,362 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Railway Operating Revenues	$3,748,396	$8,673,828	−$4,925,431
Maintenance of way	650,678	1,161,167	−510,489
Maintenance of equipment	2,063,774	2,424,486	−360,712
Transportation	1,299,516	2,381,712	−1,082,196
Total Operating Expenses	4,624,423	6,593,983	−1,969,560
Operating ratio	123.37	76.02	+47.35
Net Revenue from Operations	*876,027	2,079,845	−2,955,872
Railway tax accruals	272,795	†337,928	+610,723
Railway operating income.	*1,150,996	2,417,333	−3,568,329
Hire of freight cars	11,175	*80,671	+91,847
Joint facility rents	22,858	22,288	+570
Non-operating income	206,530	253,675	−47,145
Gross Income	*944,466	2,671,008	−3,615,474
Rent for leased roads	5,972	5,972	.....
Interest on funded debt	573,163	607,271	−34,108
Total Deductions from Gross Income	550,182	1,712,646	−1,162,464
Net Income	*1,494,648	958,362	−2,453,010

* Debit. † Credit.

CHESAPEAKE & OHIO.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to ac-

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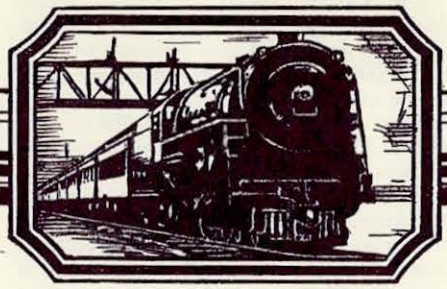

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TO ECONOMIZE— MODERNIZE

Aside from its inability to meet the requirements of present day freight service, much of the older motive power now owned by the railroads is becoming too expensive to maintain when measured by the standards of economy now being established by modern locomotives. Recently built locomotives of high horsepower capacity are demonstrating their ability to run in freight service between 100,000 and 150,000 miles, and in passenger service from 150,000 to 200,000 miles between heavy class repairs. The mileage of much of the motive power from ten to twenty years old cannot be stretched to exceed 50,000 and 60,000 miles.

The costliness of retaining obsolete motive power which jeopardizes the competitive position of the railroads thus becomes ever more apparent.

Once the trend of traffic becomes definitely established in an upward direction, the need for more locomotives which can meet the tests established by modern motive power, will rapidly become acute. It is not too early to prepare to meet this situation now.

American Locomotive Company
30 Church Street New York N.Y.

Alco Alco

quire and operate the properties of seven subsidiaries now controlled and operated under lease: the Big Sandy & Kentucky River, the Ashland Coal & Iron, the Island Creek, the Long Fork, the Millers Creek, the Pond Fork & Bald Knob, and the Sandy Valley & Elkhorn.

CHICAGO & EASTERN ILLINOIS.—*Bankruptcy Petition.*—This company on April 18 petitioned the United States District Court at Chicago for authority to reorganize under recently enacted emergency bankruptcy legislation. Judge John P. Barnes in granting the carrier's petition authorized present management to continue to operate the property. In its order the court allowed the company until June 15 to file a statement of assets and liabilities as of April 18. In its petition the railroad stated it was unable to meet debts as they mature and desired to effect a plan of reorganization pursuant to the recent act of Congress. The obligations which the carrier must meet on May 1, including interest on notes, taxes on property and interest on other obligations, total $1,568,010. The principal source of revenue is from handling bituminous coal, the volume of which has been declining due to a large extent to the disruption of Illinois coal mines.

CHICAGO & NORTH WESTERN.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $11,216,820, as compared with net deficit of $6,034,125 in 1931. Selected items from the Income Statement follow:

	1931	1932	Increase or Decrease
Average mileage operated ...	8,457.20	8,442.61	−14.59
Railway Operating Revenues	$102,270,339	$72,491,521	−$29,778,818
Maintenance of way	15,997,935	10,171,867	−5,826,068
Maintenance of equipment ..	20,584,486	14,016,140	−6,568,346
Transportation .	41,356,049	30,619,797	−10,736,253
Total Operating Expenses	85,162,948	60,604,420	−24,558,528
Operating ratio ..	83.27	83.60	+.33
Net Revenue from Operations .	17,107,391	11,887,101	−5,220,290
Railway tax accruals .	7,688,012	7,390,285	−297,727
Equipment rents—net ...	2,838,922	2,792,230	−46,692
Joint facility rents—net ...	281,745	254,298	−27,447
Net Railway Operating Income .	6,272,137	1,422,836	−4,849,301
Non-operating income	4,358,346	4,343,387	−14,959
Gross Income .	10,630,483	5,766,223	−4,864,260
Interest on funded debt ..	16,178,907	15,972,088	−206,820
Net Deficit	6,034,125	11,216,820	+5,182,696

CHICAGO & NORTH WESTERN.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $3,177,000 of its general mortgage gold bonds of 1987 and to procure the authentication and delivery of $3,377,500 of such bonds. The company has been authorized to issue $3,177,500 of interim interest bearing certificates, the purpose of which is to retire $6,355,000 of debenture bonds. The plan for refinancing the debentures contemplates payment of 50 per cent in cash and 50 per cent in the issue of general mortgage bonds. The interim certificates are intended for holders the balances due to whom are less than $1,000.

CHICAGO GREAT WESTERN.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $1,365,466, as compared with net income of $901,113 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Average mileage operated ...	1,492.61	1,495.27	−2.66
Railway Operating Revenues.	$15,159,400	$20,107,787	−$4,948,387
Maintenance of way	2,380,745	2,790,871	−410,126
Maintenance of equipment ...	2,017,291	2,277,687	−260,397
Transportation ..	5,826,723	7,424,340	−1,597,616
Total Operating Expenses ..	11,615,250	14,183,465	−2,568,215
Net Revenue from Operations .	3,544,150	5,924,322	−2,380,172
Railway tax accruals .	821,722	931,940	−110,218
Railway operating income ...	2,719,622	4,987,635	−2,268,013
Equipment rents — Net Dr.	1,404,360	1,485,240	−80,880
Joint facility rents — Net Dr.	911,484	931,301	−19,817
Net Railway Operating Income .	403,778	2,571,094	−2,167,316
Non-operating income ...	176,523	195,540	−19,017
Gross Income	580,301	2,766,634	−2,186,333
Rent for leased roads ..	77,785	77,692	+93
Interest on funded debt ...	1,758,549	1,727,315	+31,235
Total Deductions from Gross Income ..	1,945,766	1,865,521	+80,245
Net Income .	*1,365,466	901,113	−2,266,578

* Deficit.

CHICAGO, NORTH SHORE & MILWAUKEE.—*R. F. C. Loan Denied.*—Division 4 of the Interstate Commerce Commission had denied its approval of the application of the receivers for a loan of $768,000 from the Reconstruction Finance Corporation.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*New Director.*—Samuel H. Cady, vice-president and general counsel of the Chicago & North Western, has been elected a member of the board of directors of the Omaha, a subsidiary of the North Western, to succeed Ray N. Van Doren, deceased.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $2,864,234, as compared with net deficit of $2,741,441 in 1931. Selected items from the Income Statement follow:

	1931	1932	Decrease
Average mileage operated	1,736.94	1,736.94	.....
Railway Operating Revenues ...	$18,586,905	$14,831,762	$3,755,144
Maintenance of way ..	2,787,737	2,380,676	407,061
Maintenance of equipment ...	3,523,591	2,636,316	887,275
Transportation	8,508,648	6,787,698	1,720,949
Total Operating Expenses ..	16,385,094	13,039,864	3,345,230
Operating ratio	88.15	87.92	.23
Net Revenue from Operations..	2,201,811	1,791,897	409,914
Railway tax accruals .	1,147,613	959,252	188,361
Equipment rents—Net	524,022	485,113	38,909
Joint facility rents —Net ...	403,309	350,144	53,164
Net Railway Operating Income ..	123,972	*10,892	134,863
Non-operating income	131,165	111,458	19,707
Gross Income.	255,136	100,566	154,570
Interest on funded debt	2,641,070	2,627,213	13,857
Total Deductions from Gross Income	2,996,577	2,964,800	31,777
Net Deficit ..	2,741,441	2,864,234	122,793

* Deficit.

DELAWARE & HUDSON.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $4,477,591, as compared with net income of $8,788 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Railway Operating Revenues.	$23,255,774	$30,721,198	−$7,465,424
Total Operating Expenses ..	22,361,427	25,799,117	−3,437,690
Net Revenue from Operations .	894,347	4,922,081	−4,027,734
Railway tax accruals .	957,379	788,461	+168,918
Gross railway operating income .	1,267,840	5,455,804	−4,187,964
Hire of freight cars—Cr.	90,136	184,034	−93,898
Joint facility rents ...	168,860	174,548	−5,688
Net Railway Operating Income .	*67,043	4,231,390	−4,298,433
Non-operating income ...	232,759	303,404	−70,645
Gross Income	165,716	4,534,794	−4,369,078
Rent for leased roads ...	1,759,038	1,814,574	−55,535
Interest on funded debt ...	2,508,168	2,524,092	−15,924
Total Deductions from Gross Income ...	4,643,307	4,526,006	+117,302
Net Income .	*4,477,591	8,788	−4,486,379

* Deficit.

DETROIT & TOLEDO SHORE LINE.—*Securities.*—The Interstate Commerce Commission has authorized this company to pledge $1,000,000 of its series A general and refunding mortgage bonds as collateral security for notes.

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AMERICAN Fence and BANNER STEEL POSTS

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Millions are spent protecting life and property at crossings, but what about the Right-of-Way?

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Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

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DULUTH, MISSABE & NORTHERN.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $2,956,212, as compared with net income of $1,237,031 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Railway Operating Revenues	$2,374,934	$11,062,177	−$8,687,243
Maintenance of way	1,027,714	2,219,893	−1,192,178
Maintenance of equipment	1,724,544	3,068,355	−1,343,811
Transportation	1,508,387	2,915,099	−1,406,712
Total Operating Expenses	4,784,318	8,728,574	−3,944,256
Operating ratio	201.45	78.90	+122.55
Net Revenue from Operations	*2,409,384	2,333,603	−4,742,987
Railway tax accruals	125,849	†407,292	+533,141
Railway operating income	*2,535,330	2,740,798	−5,276,128
Equipment and joint facility rents—Net Cr.	10,508	456	+10,052
Net Railway Operating Income	*2,524,823	2,741,254	−5,266,077
Gross Income	*1,458,951	879,647	−5,338,598
Rent for leased roads	1,420,574	1,417,278	+3,296
Interest on funded debt	172,425	209,692	−37,268
Total Deductions from Gross Income	1,497,261	2,642,616	−1,145,354
Net Income	*2,956,212	1,237,031	−4,193,243

* Debit. † Credit.

GULF, MOBILE & NORTHERN.—*R. C. C. Loan.*—The Interstate Commerce Commission has authorized this company to pledge as collateral security for a loan of $260,000 from the Railroad Credit Corporation, not exceeding $684,000 of its first mortgage bonds, series C, which are already pledged with the Credit Corporation as security for a previous loan of similar amount.

MISSOURI PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a portion of a branch line extending from Halley, Ark., to Dermott, 5.7 miles.

NEW YORK CENTRAL.—*New Directors.*—E. B. Green, chairman of the executive committee of the Cleveland Trust Company, has been elected a director of the New York Central, succeeding William N. King, resigned. Robert F. Loree, son of L. F. Loree, president of the Delaware & Hudson, has been named a director of the Big Four and the West Shore, he being already on the New York Central board. J. R. Kinghan has been elected a director of the Big Four, succeeding W. C. Procter, resigned.

NEW YORK, NEW HAVEN & HARTFORD.—*Authority to Guarantee Subsidiary's Bonds Denied.*—The Interstate Commerce Commission has denied this company's application for authority to assume liability as guarantor for $3,151,000 of the first mortgage bonds of an electric line subsidiary, the New York, Westchester & Boston, which it proposed to pledge as collateral security for short term notes.

ILLINOIS CENTRAL.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $3,546,574, as compared with net deficit of $3,582,112 in 1931. Selected items from the Income Statement follow:

	1932	1931	Increase or Decrease
Average mileage operated	6,679	6,689	−10.01
Railway Operating Revenues	$89,305,278	$116,788,194	−$27,482,916
Maintenance of way	7,461,288	14,412,667	−6,951,379
Maintenance of equipment	17,397,638	24,508,362	−7,110,724
Transportation	34,179,715	46,731,855	−12,552,140
Total Operating Expenses	66,504,097	94,797,654	−28,293,557
Net Revenue from Operations	22,801,181	21,990,540	+810,642
Railway tax accruals	7,766,951	7,482,148	+284,804
Railway operating income	14,994,337	14,453,261	+541,076
Equipment rents—Net Dr.	2,491,182	2,733,224	−242,043
Joint facility rents—Net Cr.	75,399	127,382	−51,983
Net Railway Operating Income	12,578,554	11,847,418	+731,136
Non-operating income	1,886,901	2,597,308	−710,407
Gross Income	14,465,455	14,444,726	+20,729
Rent for leased roads	1,713,463	1,716,305	−2,841
Interest on funded debt	15,749,689	15,765,329	−15,639
Total Deductions from Gross Income	18,012,030	18,026,838	−14,808
Balance Transferred to Profit and Loss	*3,546,574	*3,582,112	+35,537

* Deficit.

NORTHERN PACIFIC.—*Operation.*—The Interstate Commerce Commission has authorized this company to operate over the Montana, Wyoming & Southern between Bridger, Mont., and Belford, 12 miles.

NORTHWESTERN PACIFIC.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon 15 miles of branch line and to operate under trackage rights over branch lines to be abandoned by the Southern Pacific.

OKOLONA, HOUSTON & CALHOUN CITY.—*Acquisition.*—W. N. Ethridge, representing this company to be organized in Mississippi, has applied to the Interstate Commerce Commission for authority to acquire and operate under lease a line from Okolona, Miss., to Calhoun City, 37.34 miles, now owned by the Southern and operated by the receiver of the Mobile & Ohio.

OREGON SHORT LINE.—*Abandonment.*—Examiner Thomas F. Sullivan of the Interstate Commerce Commission has recommended in a proposed report that the commission authorize the abandonment of the Talbot branch, from Talbot Junction, Idaho, to Talbot, 9 miles.

PITTSBURGH, CHARTIERS & YOUGHIOGHENY.—*Annual Report.*—The 1932 annual report of this company shows net income after interest and other charges of $70,813, as compared with net income of $123,983 in 1931. Selected Items from the Income Statement follow:

	1932	1931	Increase or Decrease
Railway Operating Revenues	$237,287	$376,956	−$139,670
Maintenance of way	24,737	36,489	−11,752
Maintenance of equipment	14,498	26,844	−12,346
Transportation	74,033	125,596	−51,563
Total Operating Expenses	149,301	236,253	−86,952
Net Revenue from Operations	87,985	140,703	−52,717
Railway tax accruals	19,344	32,302	−12,957
Railway operating income	68,641	108,398	−39,757
Hire of equipment—Net Dr.	11,450	4,159	+7,292
Joint facility rents—Net Dr.	10,359	10,359	.....
Net Railway Operating Income	46,832	93,880	−47,049
Non-operating income	30,235	34,257	−4,022
Gross Income	77,066	128,137	−51,071
Total Deductions from Gross Income	6,253	4,154	+2,099
Net Income	70,813	123,983	−53,170

SOUTHERN.—*Clayton Law Case Discontinued.*—The Interstate Commerce Commission has issued an order discontinuing its proceeding in which it filed a complaint against the Southern charging violation of the Clayton anti-trust law by reason of its acquisition in 1901 of control of the Mobile & Ohio and the New Orleans and Northeastern. The complaint was filed in 1929 and the commission made an extensive investigation of the matter in addition to hearing arguments on a motion filed by the Southern to dismiss the proceedings on the ground that the law was not retroactive. Since then the Mobile & Ohio has gone into receivership.

SOUTHERN PACIFIC.—*Executive Committee Changes.*—Incident to the annual meeting of stockholders of the Southern Pacific, held April 5, a reorganization meeting of the newly elected board of directors was held in New York on April 19. Principal officers were re-elected or reappointed. An executive committee to serve for the ensuing year was also elected composed of Hale Holden (chairman) Henry W. de Forest, Cleveland E. Dodge, Walter Douglas, Edward S. Harkness, Ogden L. Mills, Jackson E. Reynolds, and the following additional members: Paul Shoup, vice-chairman; and A. D. McDonald, president, making a total committee of nine. The executive committee further reduced by 10 per cent the salaries of all officers in the higher salaried classes.

WABASH.—*Annual Report.*—The 1932 annual report of this company shows net deficit after interest and other charges of $6,673,695, as compared with net deficit of

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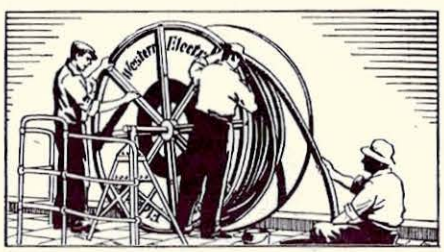
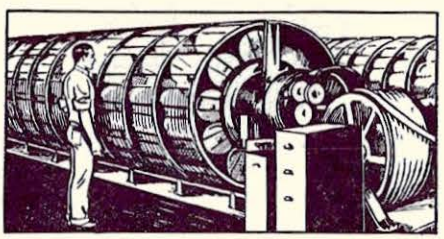
3 REASONS why it pays to buy cable "made to Bell Standards"

First: Western Electric Lead Covered Cable is designed by telephone engineers well qualified by experience for this work. Continuing research is carried on to maintain the recognized scientifically correct structure.



Second: Western Electric Cable is made by the leading telephone cable manufacturing organization—with years of experience in producing cable for the Bell System.



Third: Because of the care given by cable specialists to each detail of design, of raw material selection, of manufacturing processes, experience on leading roads proves that Western Electric Lead Covered Cable has the durability and other necessary characteristics to give years of uninterrupted service in railroad communication systems.

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Western Electric

LEAD COVERED CABLE AND TELEPHONE APPARATUS

DISTRIBUTED BY GRAYBAR ELECTRIC CO., *Offices in 75 Principal Cities*

$7,050,746 in 1931. Selected items from the Income Statement follow:

	1932*	1931*	Increase or Decrease
Average mileage operated	2,520.87	2,523.83	-2.96
Railway Operating Revenues	$37,785,634	$49,163,326	-$11,377,692
Maintenance of way	4,602,831	5,421,979	-819,148
Maintenance of equipment	6,255,128	9,052,868	-2,797,740
Transportation	15,991,915	22,197,142	-6,205,227
Total Operating Expenses	30,684,901	42,024,255	-11,339,354
Operating ratio	81.21	85.48	-4.27
Net Revenue from Operations	7,100,732	7,139,071	-38,339
Railway tax accruals	2,387,722	2,631,176	-243,453
Railway operating income	4,692,397	4,485,520	+206,876
Hire of freight cars—Dr.	2,568,284	3,123,274	-554,989
Joint facility rents	1,610,240	1,701,751	-91,511
Net Railway Operating Income	524,669	366,995	+891,664
Non-operating income	845,382	971,060	-125,678
Gross Income	1,370,051	604,065	+765,986
Rent for leased roads	354,940	356,903	-1,963
Interest on funded debt	6,826,755	6,787,348	+39,407
Total Deductions from Gross Income	8,043,746	7,654,811	+388,935
Net Deficit	6,673,695	7,050,746	-377,051

* Combined Corporate and Receivers' Accounts.

Average Prices of Stocks and of Bonds

	Apr. 18	Last week	Last year
Average price of 20 representative railway stocks	24.36	24.21	19.41
Average price of 20 representative railway bonds	53.18	53.34	60.88

Dividends Declared

Kansas City, St. Louis & Chicago.—$1.50, quarterly, payable May 1 to holders of record April 19.

Richmond, Fredericksburg & Potomac.—7 Per Cent Guaranteed, 3½ per cent, semi-annually; 6 Per Cent Guaranteed, 3 per cent, semi-annually, both payable May 1 to holders of record April 30.

Construction

ERIE.—Contract plans and an estimate of cost of $106,200 exclusive of land and property damages, have been approved by the New York Public Service Commission, for the construction of approaches in connection with the elimination of the grade crossings of this road on the Spring Valley-Suffern highway just west of Monsey station, Ramapo, Rockland Co., N. Y.

LEHIGH VALLEY.—The New York Public Service Commission at a recent rehearing affirmed its orders directing the elimination of the Main street crossing of this road in Romulus, Seneca County, N. Y. The order directed the elimination of the crossing by depressing the highway and carrying it under the railroad. The total estimate cost of the work is $106,200.

Railway Officers

EXECUTIVE

H. A. Radtke, general manager of the Missouri Southern, has been elected also vice-president, with headquarters as before at Leeper, Mo.

Andrew P. Titus, who was recently elected president of the Illinois Terminal in addition to his position as general manager, as announced in the *Railway Age* of April 15, page 569, has been in railway service nearly 43 years. He was born on April 11, 1875, on a farm near Princeton, N. J., and was educated at Princeton Preparatory School and Princeton College, entering railway service on July 1, 1890, in the car department of the Lake Shore & Michigan Southern (now part of the New York Central) at Cleveland, Ohio. From 1893 to 1895, Mr. Titus was connected with a mining company in Mexico, and then returned to the L. S. & M. S. at Cleveland. In May, 1900, he went with the Wheeling

Andrew P. Titus

& Lake Erie as car distributor and chief clerk to the superintendent of car service, being promoted to superintendent of car service at Pittsburgh, Pa., in November, 1905, to assistant superintendent at Canton, Ohio, in May, 1907, and later to superintendent at Canton. He entered the service of the Chicago & Alton (now the Alton) in September, 1912, as general superintendent at Chicago, being promoted to general manager in November, 1915. In February, 1922, Mr. Titus was elected vice-president in charge of operation of the Alton, and in August of the same year when the company went into receivership he was made chief operating officer. In January, 1929, Mr. Titus went with the Illinois Terminal as vice-president and general manager, at St. Louis, holding this position until his recent election as president.

FINANCIAL, LEGAL AND ACCOUNTING

Edward C. Craig, general solicitor of the Northern Lines of the Illinois Central, who has been elected general counsel, with headquarters as before at Chicago, has been connected with the legal department of the Illinois Central for 32 years. He was born on April 7, 1872, at Mattoon, Ill., and graduated from the University of Illinois in 1893, later attending Harvard Law School. He was admitted to the bar in

Edward C. Craig

1896 and entered the practice of law in partnership with his father in the same year at Mattoon, later entering into a partnership with his brothers. In 1901, Mr. Craig was appointed local attorney for the Illinois Central at Mattoon and in January, 1923, he was promoted to general attorney at Chicago. On January 1, 1928, he was further advanced to general solicitor of the Northern Lines, which position he was holding at the time of his recent election as general counsel.

Vernon W. Foster, general attorney for the Illinois Central, who has been promoted to general solicitor, as noted in the *Railway Age* of April 15, first entered the service of the I.C. 35 years ago. He was born at Norwalk, Ohio, on January 16, 1881, and after graduating from the public schools at that place he attended a business college at Sandusky, Ohio, later taking a secretarial course at a shorthand school at Chicago. He entered the service of the Illinois Central in July, 1898, as secretary to the auditor of passenger re-

Vernon W. Foster

ceipts at Chicago, being transferred to the law department in the following year as secretary to the assistant general solicitor. Mr. Foster then began the study of law in his spare time at the Kent College of

(*Continued on page 616*)

Annual Report

Minneapolis, St. Paul & Sault Ste. Marie Railway Co.

Wisconsin Central Railway Company

For the fiscal year ended December 31, 1932

To The Stockholders:

Submitted herewith is a report for the fiscal year ended December 31, 1932.

The Gross Revenue, Operating Expenses, Fixed Charges, Net Income, etc., are shown in the following condensed statement:

	Soo Line (Soo District)	Wis. Cent. Ry.* (Chicago District)	System 1932	System 1931
Gross Revenue.	$12,596,141.46	$9,482,975.42	$22,079,116.88	$28,439,228.25
Operating Expenses	11,514,699.15	8,398,560.25	19,913,259.40	24,010,047.10
Net Revenue	$1,081,442.31	$1,084,415.17	$2,165,857.48	$4,429,181.15
Income from Other Sources	902,900.76	74,751.48	977,652.24	1,343,400.36
Total Income ...	$1,984,343.07	$1,159,166.65	$3,143,509.72	$5,772,581.51
Fixed Charges, Taxes, etc. ..	7,523,382.81	4,681,007.23	12,204,390.04	12,750,228.24
Net Deficit.	**$5,539,039.74**	**$3,521,840.58**	**$9,060,880.32**	**$6,977,646.73**

*All the figures in this report for the Wisconsin Central Railway include operations during receivership, December 3 to 31, inclusive.

Gross Revenue for the System during 1932 was $22,079,117.00, a decrease of $6,360,111.00, or 22.36% compared with the previous year.

Freight Revenue for the System during 1932 was $18,676,753.00, a decrease of $4,950,228.00, or 20.95% compared with the previous year.

The decreases in Freight Revenue were as follows:

Products of Agriculture	$706,877
Products of Forests	945,026
Less than Carload Freight.....	741,288
Animals and Products	563,937
Products of Mines	788,065
Manufactures and Miscellaneous	1,205,035
Total Decrease	$4,950,228

Products of Agriculture. Our shipments of grain to Minneapolis and Duluth markets from western territory tributary to our line, compared with corresponding shipments of the previous year, were as follows:

	1932 Bushels	1931 Bushels
Before August 1	3,895,000	13,961,000
After August 1	13,763,000	8,222,000
Total	17,658,000	22,183,000

The abnormally small grain movement shown above for the first part of 1932 was because the 1931 crop was unusually light and most of it had moved to market before the beginning of 1932. The 1932 crop tributary to our line has been estimated at approximately 46,000,000 bushels. If the normal proportion of about 68% of that crop had been shipped to market before the close of the calendar year our grain shipments for the latter part of 1932 would have been about 31,000,000 bushels. The much smaller actual shipment during that period of 13,763,000 bushels shown above is explained by the extremely low prevailing market prices for grain which many producers would not accept. The estimated balance of our 1932 crop amounting to about 32,000,000 bushels should be shipped to market before August 1, 1933.

The following table shows the grain crop harvested in each of the years shown and subsequently shipped to market over our line.

Year	Bushels	Year	Bushels
1915	83,527,877	1924	66,280,641
1916	34,233,059	1925	55,374,519
1917	28,560,411	1926	30,627,251
1918	52,002,485	1927	54,138,346
1919	30,393,424	1928	56,816,503
1920	41,232,301	1929	32,867,641
1921	36,832,469	1930	41,556,685
1922	59,429,961	1931	12,118,000
1923	34,657,645		

Products of Forests decreased as a result of the general depression, and the heavy increase in duty on lumber imported from Canada.

Less Than Carload Freight decreased as a result of poor business conditions and the activities of trucks and forwarding companies.

Animals and Products decreased as a result of the extensive trucking to market of livestock and the low level of prices.

Products of Mines decreased principally as a result of reduced shipments of iron ore. Shipments handled by this Company during the year 1932 amounted to 557,435 tons as compared with 1,612,841 tons in the year 1931, a decrease of 65.49%. Shipments of iron ore from mines in the Lake Superior District via all railroads were 3,588,608 tons during the year 1932 as compared with 23,496,228 tons in the preceding year. Reduction in the movement of sand, gravel, and stone was due to decreased construction.

Manufactures and Miscellaneous decreased as a result of the general business depression and the reduced purchasing power of the farmer due to small crops in 1931 and low prices for his products. Trucks continue to have an adverse effect on our carload shipments of this class of freight.

The services of Pace, Inc., industrial engineers, were continued through last year and they have further advanced their industrial surveys and rehabilitation work at various points along our line.

Comparisons of Cars Loaded on our line and received from connections, and revenue, 1928 to 1932, inclusive, are shown in the statement below:

	(000 omitted from Revenue) 1928	1929	1930	1931	1932
Products, Agricultural:					
Cars	100,157	80,619	73,372	54,714	45,455
Revenue	$10,206	$7,589	$7,129	$4,507	$3,800
Products, Animal:					
Cars	35,432	34,114	27,591	25,818	21,096
Revenue	$2,594	$2,554	$2,152	$2,022	$1,458
Products, Mines:					
Cars	141,548	158,910	120,825	84,354	62,604
Revenue	$6,374	$7,050	$5,554	$4,043	$3,255
Products, Forests:					
Cars	132,744	129,965	95,780	60,747	36,882
Revenue	$6,016	$5,982	$4,602	$2,892	$1,947
Miscellaneous:					
Cars	136,164	136,390	116,697	90,214	69,786
Revenue	$11,153	$11,640	$9,738	$7,123	$5,918
Merchandise:					
Tons	483,520	461,194	382,760	296,244	197,838
Revenue	$5,130	$4,937	$3,967	$3,040	$2,299
Grand Total:					
Cars	546,045	539,998	434,265	315,847	235,823
Revenue	$41,473	$39,752	$33,142	$23,627	$18,677

Passenger Revenue was $1,424,352.00, a decrease of $758,-122.00 or 34.74%, local business decreasing 29.57% and interline or through business 42.05%. The decreases were due to general business conditions and increased use of highway conveyances.

Revenue from Milk and Cream handled in baggage cars was $276,354.00, a decrease of $85,394.00, of which $65,028.00 was on the Soo District and $20,366.00 on the Chicago District.

In addition to the movement of milk and cream in baggage cars, the Chicago District handled milk in tank cars producing freight revenue of $28,606.00, as compared with $37,432.00 during the previous year.

Department of Agricultural Development. As a result of the serious drought in 1931 this department was required to devote much of its time during the first five months of 1932 to emergency work in the drought area in North Dakota. Surveys were made to locate suitable supplies of feed and seed for use in the stricken area. In addition, much assistance was given governmental agencies in connection with expediting loans to farmers to finance their feed and seed requirements.

Various projects including experimental work on corn, potatoes, fertilizer, livestock, and soy beans, as well as our activities with the boys' and girls' clubs were continued, although somewhat curtailed on account of economic conditions.

The activities of the Agricultural Development Department have been more closely coordinated in supplying the communities with information on the advantages of shipping by rail instead of by truck and with data on the formation of farmers' shipping associations.

Bus and Truck Competition. Because of the general lack of regulation and consequent instability of rates charged by trucks and forwarding companies, a general policy of meeting those rates has not been adopted. It is hoped that the present sessions of the various state legislatures will enact laws regulating those rates and making it feasible to compete with these

[Advertisement]

GENERAL BALANCE SHEET DECEMBER 31, 1932

ASSETS

Property Investment:		
Road	$103,984,526.96	
Equipment	34,823,930.05	
	$138,808,457.01	
Less Reserve for Equipment Depreciation	15,289,008.77	
Total		$123,519,448.24
Sinking Fund		1,866.68
Deposits in lieu of Mortgaged Property Sold		4,884.94
Miscellaneous Physical Property		3,106,917.72
Wis. Cent. Ry. Co., Preferred Stock (Pledged for M. St. P. & S. S. M. Ry. Co. 4% Leased Line Certificates)		11,256,400.00
Investments in Proprietary, Affiliated and Controlled Companies:		
Stocks	$12,008,382.47	
Bonds	8,026,000.00	
W. C. Ry. Co. Advances	696,660.00	
Other Advances	2,389,443.71	
Total		23,120,486.18
Other Investments:		
Stocks	$1.00	
Bonds	1,849,200.00	
Notes	182,014.56	
Real Estate Sales Contracts	41,520.72	
Total		2,072,736.28
Current Assets:		
Cash	$395,861.24	
Special Deposits	141,737.80	
Loans and Bills Receivable	1,110.95	
Traffic and Car Service Balances	146,390.32	
Agents and Conductors Balances	281,081.25	
Miscellaneous Accounts Receivable	405,381.64	
Material and Supplies	2,747,053.26	
Interest and Dividends Receivable	90,645.37	
Receiver of W. C. Ry. Co	196,084.42	
Other Current Assets	13,311.00	
Total		4,418,657.25
Deferred Assets:		
Working Fund Advances	$25,930.69	
Other Deferred Assets	243,013.98	
W. C. Ry. Co. Advances	6,988,482.78	
Total		7,257,427.45
Unadjusted Debits:		
Rents and Insurance Paid in Advance	$34,653.65	
Discount on Funded Debt	809,343.09	
Other Unadjusted Debits	722,083.36	
Total		1,566,080.10
Grand Total		$176,324,904.84

LIABILITIES

Capital Stock:		
Common	$25,206,800.00	
Preferred	12,603,400.00	
Total		$37,810,200.00
Governmental Grants:		
Grants in Aid of Construction		3,224.89
Funded Debt Unmatured		93,871,800.00
M. St. P. & S. S. M. Ry. Co. 4% Leased Line Certificates (Issued in exchange for Preferred Stock of Wis. Central Ry. Co., held by Trustee)		11,256,400.00
Non-Negotiable Debt to Affiliated Companies		3,044,010.62
Current Liabilities:		
Loans and Bills Payable	$14,720,351.46	
Traffic and Car Service Balances	319,167.43	
Audited Vouchers and Wages Payable	1,715,980.74	
Miscellaneous Accounts Payable	70,515.83	
Interest Matured Unpaid	1,996,515.35	
Funded Debt Matured Unpaid	3,000.00	
Unmatured Interest Accrued	462,883.57	
Unmatured Rents Accrued	6,816.13	
Other Current Liabilities	115,497.57	
Total		19,410,728.08
Deferred Liabilities:		
Equipment Purchase Contracts	$1,355,225.99	
Other Deferred Liabilities	32,003.81	
Total		1,387,229.80
Unadjusted Credits:		
Tax Liability	$970,915.27	
Premium on Funded Debt	919.19	
Insurance and Casualty Reserves	43,045.37	
Other Unadjusted Credits	818,724.86	
Total		1,833,604.69
Corporate Surplus:		
Additions to Property through Income and Surplus	$258,430.81	
Funded Debt Retired through Income and Surplus	265,000.00	
Sinking Fund Reserve	1,866.68	
Profit and Loss, Credit Balance	7,182,409.27	
Total		7,707,706.76
Grand Total		$176,324,904.84

forms of transportation. In this connection it is interesting to note that the Citizens Transportation League, an organization formed by a number of business concerns with the object of securing support from interested voters for the enactment of legislation making it possible for railroads to compete with such forms of transportation, was able to get over 240,000 signatures of voters, principally in Minnesota.

Maintenance of Way and Structures Expenses decreased $687,647.00, or 17.47%. The total expenditure was $3,248,477.00, compared with an average annual expenditure for the three years, 1927 to 1929, inclusive, of $6,667,000.00. Every possible economy was effected.

Maintenance of Equipment Expenses decreased $815,914.00, or 14.49%. The total expenditure was $4,814,563.00, compared with an average annual expenditure for the three years 1927 to 1929, inclusive, of $8,735,000.00. Only such locomotives and cars were maintained as were necessary to handle the business offered.

Transportation Expenses decreased $2,339,651.00, or 19.51%. The ratio of this decrease was very closely in line with the ratio of decrease in gross revenue. On practically all branch lines mixed trains were substituted for passenger trains and service curtailed to the actual requirements to protect the business offered and comply with State Laws. The greatly decreased movement of grain and ore which normally contribute to heavy train tonnage and economical operation resulted in higher transportation costs per unit.

The ten per cent wage reduction covering all employes in effect from February 1, resulted in a decrease of approximately $1,243,000.00.

Hire of Equipment charges decreased $55,217.00. This was due to the continued decrease in car loading, which reduced the interchange of equipment and resultant payments to other lines. Business conditions also caused a material decrease in rental for privately owned freight cars.

Property Investment. The investment in road account for the Systems shows a net decrease for the year of $183,167.89, resulting from retirements and accounting adjustments amounting to $716,564.48, partly offset by expenditures for additions and betterments totaling $533,396.59. Abnormal retirements aggregating $489,942.83 are included in the above figures, and represent the removal of 150 maintenance of way, station, and shop structures, and 80,255 feet of side and yard tracks, no longer required because of consolidation of sections and discontinuance of or reductions in service.

The equipment investment account for the System was likewise decreased by a net amount of $1,101,810.04, due to retirements and accounting adjustments totaling $1,160,859.00 partly offset by expenditures for additions and betterments of $59,048.96. The retirements include 31 locomotives, 396 box cars, 15 passenger coaches, and 6 sleeping cars. During the year a special equipment retirement program was undertaken, with authority from the Interstate Commerce Commission to charge the retirement loss to Profit & Loss instead of Operating Expenses. 215 of the units included in the year's retirements represent the part of this special program accomplished during 1932.

Funded and Unfunded Debt. The outstanding indebtedness was increased during the year a net amount of $3,435,834.46, as follows:

Increases:		
Minneapolis, St. Paul & Sault Ste. Marie Railway Company:		
Two Year Six Percent Secured Notes	$5,000,000.00	
Short Term Loans from Reconstruction Finance Corporation	6,709,130.00	
Short Term Loans from The Railroad Credit Corporation	3,217,890.00	
Total Increase		$14,927,020.00
Decreases:		
Minneapolis, St. Paul & Sault Ste. Marie Railway Company:		
One Year Five Percent Secured Notes	$9,997,000.00	
Twenty-five Year Gold Notes	105,000.00	
*First Refunding Mortgage Bonds, Series "B"	100,000.00	
Equipment Trust Notes	744,000.00	
Equipment Purchase Contracts	305,517.00	
Short Term Loans from Reconstruction Finance Corporation	209,668.54	
Wisconsin Central Railway Company:		
First General Mortgage Bonds	10,000.00	
Marshfield & Southeastern Division Mortgage	20,000.00	
Total Decrease		11,491,185.54
Net Increase		$3,435,834.46

*Owned by the Soo Line on December 31, 1932.

The Canadian Pacific Railway Company advanced the Soo Line $1,400,000 during the year.

In order to refinance $10,000,000 of One Year Five Percent Secured Notes due August 1, 1932, the Soo Line asked the holders to accept as payment the full amount of the interest due on August 1, 1932, together with fifty percent of the principal in cash and the remaining fifty percent of the principal in new Six Percent Notes of the Soo Line maturing on August 1, 1934, secured similarly to the old notes. Prior to December 31st that arrangement was consummated with the holders of $9,997,000 of the old notes. Since that time the remaining $3000.00 has been paid on the same basis. The cash to make the 50% cash payment was borrowed from the Reconstruction Finance Corporation.

[Advertisement]

The balance of the loans from the Reconstruction Finance Corporation, shown in the above statement, were used for the payment of principal on car trusts and taxes. Loans secured from The Railroad Credit Corporation were used to pay maturing interest of the Soo Line, Wisconsin Central Railway, and Central Terminal Railway.

For some years, the Wisconsin Central has not been earning its fixed charges and recently has failed to earn even operating expenses. As the owner of practically all its capital stock and large amounts of its bonds, the guarantor of some of its obligations, and the operator of its properties, the Soo Line had made large advances to the Wisconsin Central, over $2,200,000 in 1932 alone, to meet its deficits and keep its properties in operation. Being unable to make further advances and considering that it was under no obligation to do so, the Soo Line served notice of its intention to discontinue operating those properties, unless it were furnished with funds with which to meet the coming deficits. The Wisconsin Central was unable to provide the funds.

In that situation, one of the Wisconsin Central bondholders obtained the appointment of a receiver with power, subject to the Court's approval, to provide the funds for continuing to operate that Company's properties through the issue of receiver's certificates. The receiver immediately agreed with the Soo Line that it should continue for the time being to operate the Wisconsin Central properties in his behalf and be reimbursed for future deficits out of the proceeds of receiver's certificates.

A protective committee of Wisconsin Central bondholders was then formed and took the position that the existing lease should be construed as requiring the Soo Line to continue to operate at its own expense the Wisconsin Central properties. In view of the Soo Line's position that the lease should not be so construed and that, in any event, it was unable to continue to meet Wisconsin Central deficits without reimbursement, the protective committee agreed not to oppose the issue of receiver's certificates to reimburse the Soo Line for such deficits incurred after January 31, 1933. It was further agreed that the question of the Soo Line's right to retain permanently the reimbursement for the period after January 31 and also to obtain reimbursement for deficits incurred in its previous operations in behalf of the receiver from December 3, 1932 to January 31, 1933, should be subsequently determined in a proceeding in which the lease would be authoritatively construed.

In view of the receivership, the interest due on Wisconsin Central bonds on January 1, 1933, was not paid.

C. T. JAFFRAY,
President.

[Advertisement]

News (Railway Officers)

(*Continued from page 613*)

Law, Chicago, completing his course in 1902. He was advanced through the positions of court reporter, investigator of claims and assistant to the local attorney, being on January 1, 1906, appointed assistant local attorney for the Illinois Central in Cook county. On July 1, 1916, he was promoted to local attorney for the same territory and on January 1, 1926, he was further advanced to district attorney. Mr. Foster was appointed general attorney at Chicago, on July 1, 1932, which position he continued to hold until his recent promotion to general solicitor.

PURCHASES AND STORES

F. X. Soete, assistant to general manager of the New York, Ontario & Western is now also in charge of purchases. Mr. Soete will have headquarters at New York and Middletown, N. Y.

TRAFFIC

W. O. Wright, passenger traffic manager of the Boston & Maine has been appointed a similar position with the Maine Central.

Arthur C. Jackson, who has been connected with the industrial department of the Missouri Pacific at Houston, Tex., has been appointed to the newly-created position of assistant general passenger agent at the same point.

W. T. Price, assistant general freight agent on the Union Pacific at Denver, Colo., has been appointed also assistant general passenger agent at the same point. **W. K. Cundiff,** assistant general passenger agent at Denver, has been appointed general agent in the passenger department with the same headquarters.

Harry Wilson, chairman of the Freight Traffic Managers' Committee, Trunk Line Association, has been appointed vice-chairman of that association and of the Traffic Executive Association, Eastern Territory. **W. R. Askew** will succeed Mr. Wilson as chairman of the Freight Traffic Managers' Committee, and **N. W. Hawkes,** formerly associated with the Official Classification Committee has been appointed to succeed Mr. Askew as chairman of the Trunk Line Association's General Freight Committee. All will have headquarters at New York.

ENGINEERING AND SIGNALING

W. J. Backes, chief engineer of the Boston & Maine, has been appointed a similar position with the Maine Central.

MECHANICAL

John Roberts has been appointed chief of motive power and car equipment of the Canadian National, with headquarters at Montreal, Que., succeeding the late **C. E. Brooks.** Mr. Roberts was born at Kilmarnock, Scotland in 1881, and entered the service of the C. N. R. as machinist in the motive power shops at Stratford in 1903.

John Roberts

He became charge hand there in 1907, and was appointed foreman of the machine shop in 1917, and general foreman in 1920. In 1921, Mr. Roberts became acting superintendent and later in the same year was confirmed in his appointment as superintendent of the Stratford shops where he continued until his appointment as general supervisor of shop methods for the system in 1923, with headquarters at Montreal, Que. On August 1, 1932 Mr. Roberts was appointed general superintendent of motive power and car equipment for the Central region, at Toronto, Ont., the position he held until his recent promotion.

OBITUARY

Thomas G. Beard, who retired in 1932 as assistant freight traffic manager of the Southern Pacific Lines in Texas and Louisiana, died at Houston, Tex., on April 7. Mr. Beard was born on January 2, 1863, at Bristol, England, and entered railway service in 1884 as a stenographer and clerk on the Louisville & Nashville. Subsequently Mr. Beard served in various clerical positions with the Louisville, New Orleans & Texas (now part of the Illinois Central) and the East Tennessee, Virginia & Georgia (now part of the Southern). In 1887, he went with Southern Pacific where in 1903 he was appointed assistant general freight agent of the Southern Pacific Lines in Texas and Louisiana, being advanced to general freight agent in 1916. He was further promoted to assistant freight traffic manager in 1929, which position he held until his retirement last year.

Avery Turner, general agent in the tax and land department of the Atchison, Topeka & Santa Fe at Amarillo, Tex., and formerly vice-president of the Panhandle & Santa Fe, died on April 14 at Amarillo. Mr. Turner, who was 82 years of age, was educated at Cornell University, Ithaca, N. Y., and after serving in minor capacities with a number of roads, he entered the service of the Santa Fe in 1875 and during the next two years served as a rodman, construction foreman, yardmaster, brakeman, conductor and trainmaster. Thereafter he served as division superintendent and general superintendent at various points until 1902, when he was made vice-president and general manager of the Southern Kansas of Texas and of the Pecos Valley Lines (both parts of the Santa Fe) at Amarillo, Tex. On April 1, 1909, Mr. Turner relinquished the position of general manager of these lines, which are now known as the Panhandle & Santa Fe, and in 1920 he was appointed general agent at Amarillo, which position he continued to hold until his death.

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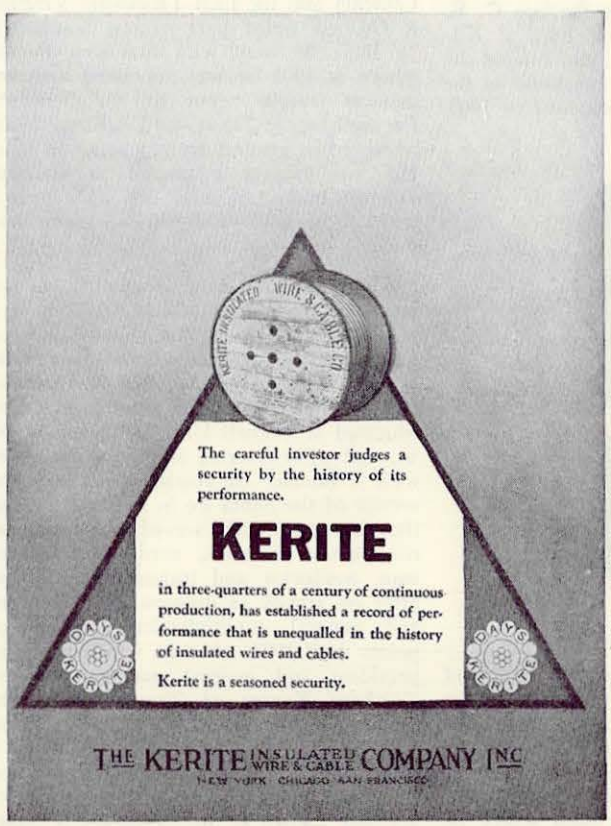
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to Advertisers
see
page 44

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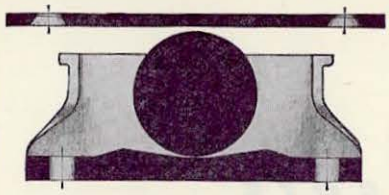

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1931—May 16—June 13—July 4—Aug. 1, 8, 15, 22, 29—Sept. 5, 12—Oct. 3—Dec. 5.
1932—Jan. 2—March 5—April 2—May 7—June 18, 25—Sept. 3.
1933—Feb'y 4, 25—March 4—April 1.

WINE RAILWAY APPLIANCE CO.
TOLEDO, OHIO
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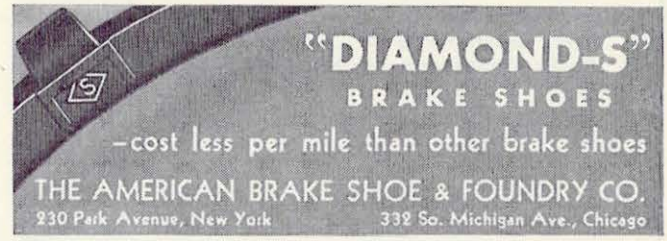
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Name ..... Old Address .....

New Address .....

..... Position ..... Company .....

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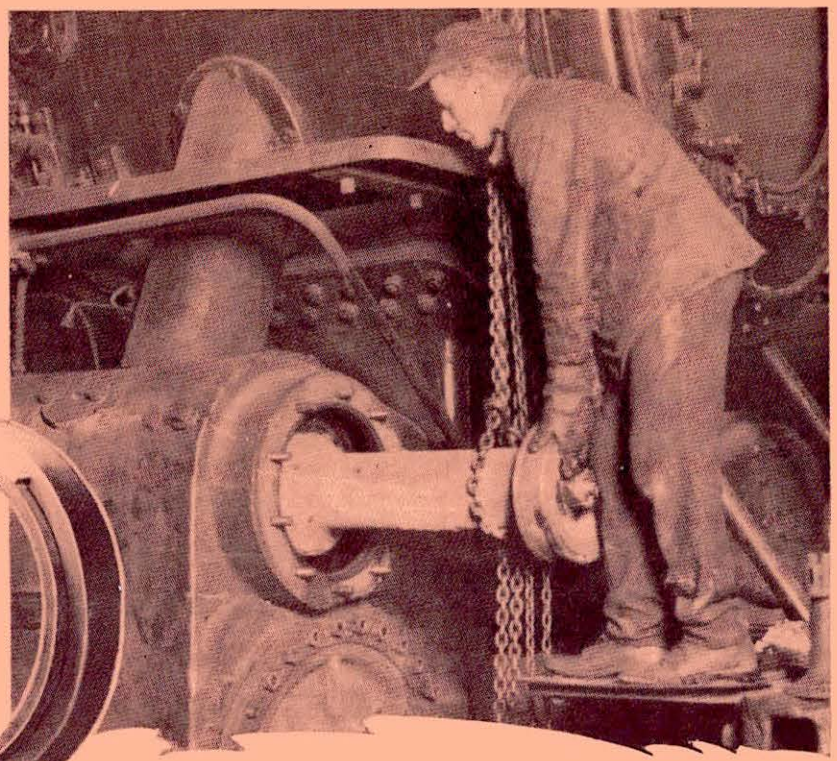

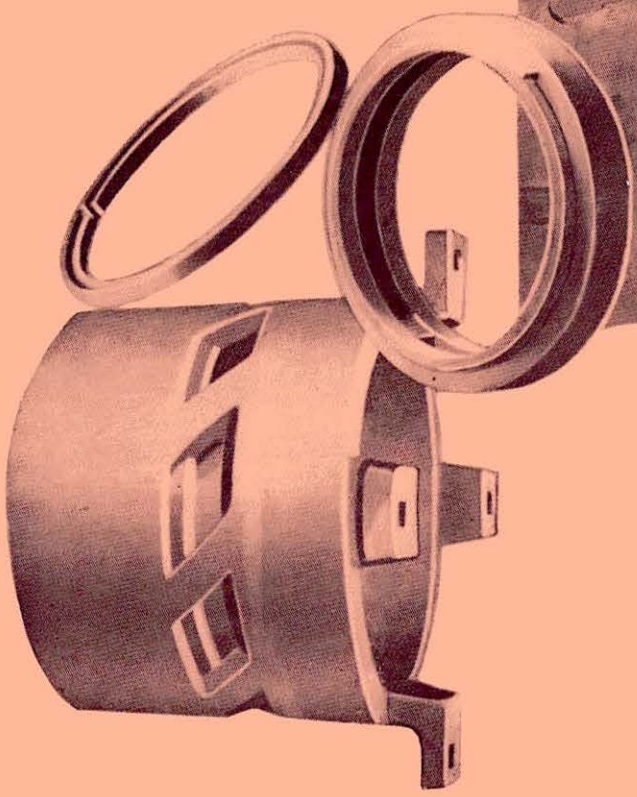

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